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President: Dean Snyder, 3213 Fairland Drive, Schnecksville, PA 18078

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Secretary-Treasurer: Bob Hoke, 6304 Kaybro Street, Laurel, MD 20707 bob@hoke.net

Editor: Greg Brick, 1001 Front Avenue, Saint Paul, Minnesota, 55103 Aplustre@msn.com

Trustees: Larry E. Matthews, Marion O. Smith, Gary K. Soule, Jack Speece
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CRAIGHEAD CAVERNS (LOST SEA) SALTPETER WORKS

Marion O. Smith

During the first half of the 19th Century, William B. Craighead (d. March 18, 1850), a farmer possessing 900 acres near Dancing Branch in Monroe County, owned one of southeastern Tennessee's most significant caves. Long known as Craighead Cave or Caverns, it is located some five and a half miles from Sweetwater on the northwest side of Milksick Knobs, with a listed length and depth of 7,530 and 276 feet. At some early time it was mined for saltpeter, probably by permission of the Cherokee Nation during or before the War of 1812-15. By 1842, the cave was so well known that an author devoted three pages of his book to its description:

The entrance is about mid-way between the summit and the base of the ridge; and is...just large enough to admit a large man....The descent...is perpendicular for about twenty feet; and then a gradual slope...for several hundred yards; when a chamber opens....There are a chain of chambers, connected by narrow passes...but each successive chamber is nearly as large as the first....In one of the large rooms, there is an inexhaustible bank of nitrous earth, from which great quantities of salt-petre have been manufactured....The connected links , or successive chambers of the main cavern, continue about three quarters of a mile.... In some of the chambers, there are ...stalactites hanging from...above, some...perhaps ten inches in diameter and ten feet in length, some not larger than a goose-...quill....

Upon the creation of the Confederacy in 1861 there was renewed interest in finding sources of saltpeter, the main ingredient of gunpowder. In June of that year Randolph Ross, Jr., and John Marshall McCue obtained a contract with the Confederate Ordnance Bureau “for fifty tons” of saltpeter, which they were to make “from caves...which are believed to be almost inexhaustible.” Late that same month a Nashville paper reported that “Parties” were “engaged in the manufacture of Saltpetre in a cave in the ‘Milk Sick Knobs’ of Monroe county.” On the following August 29, Ross received $2,000 from Captain Smith Stansbury “as an advance upon Saltpetre to be furnished” and Ross and McCue gave their bond for that amount.

Ross at the advent of the war lived in Monroe County. He apparently was the son of the Lexington, Virginia, man who, during the years 1814-18, acquired ownership of Big Bone Cave, Tennessee's most prominent saltpeter mine. Randolph, Jr., was born in Virginia sometime between 1815 and 1818. In 1850 he was some sort of contractor in Franklin County, Tennessee. There, on September 16, 1851, he married Catherine J. Hale. She must have died during the following decade, because about November 9, 1861, in Monroe County, Ross married Mary Ann, widow of Newton J. Spillman. Already the owner of land in Pike County, Illinois, and Vanderburgh County, Indiana, Ross apparently got involved with Craighead Cave through his association with Mary Ann, because her brother Joseph C. Boyd, (d. June, 1863), was one of the purchasers of the Craighead property. McCue (1816-180), a native and resident of Augusta County, Virginia, was a well-to-do farmer and long-time member of the state House of Delegates. In late 1860 he sought patents for and promoted a self-loading “Virginia Gun” invented by his partner and neighbor, Lorenzo Sibert.

The extent of development and the amount of saltpeter, if any, delivered by Ross and McCue is not known. They may have had difficulty in setting up their operation, or possibly their contract was only good through 1861. But, whatever the situation, Ross’s participation in the partnership seems to have ended about that time. On January 6, 1862, McCue made a new agreement with Colonel Josiah Gorgas, chief of Ordnance, “to deliver...Two hundred and fifty thousand
pounds of saltpeter or as much as can be delivered within the current year." The saltpeter was “to be procured from caves,” with no more than eight percent impurities, and sent to “the nearest Railroad Station.” The Confederate government pledged to pay “forty cents per pound,” although this was later raised to seventy-five cents. The next day the Virginia legislature adopted a joint resolution authorizing “McCue or any other citizen of the commonwealth” making “saltpeter or other munitions of war” to take from the state to any other Confederate state “any number of free negroes” to work in those facilities. Two days after that the Ordnance Bureau advanced McCue $1,500, which he as principal and fellow Augusta Countian William M. Tate (c. 1816-1889) as security bound themselves. If McCue “fully and faithfully” accounted to the Confederate states the money, meaning if saltpeter worth at least that amount was made, then the “obligation [was] to be void and of none effect.”

It is not known if McCue ever set foot in East Tennessee, or induced any Virginia free blacks to go there. But his new partner in the procurement of saltpeter, Lorenzo Sibert, soon moved south to oversee the operation. Seemingly a talented and enterprising man, little has been learned about him. Born around 1810 to 1815, he was a geologist before the war besides being a gun designer. After the conflict he for a time supervised the mining of manganese in Rockbridge County, Virginia, and invented “a process for making cast steel.” By 1870 he superintended an iron works in his home county.

On June 12, 1862, William G. Strange, a former professor at Richmond College, Virginia, and temporarily an assistant superintendent of the recently established Niter District No. 7, East Tennessee, journeyed to Sweetwater and made an inspection of “Siebert’s Cave.” Unfortunately, his observations have not survived. However, the following August 11, at “Nitre works Monroe County E Tennessee,” Siebert wrote a lengthy epistle to Confederate Secretary of War George W. Randolph, which provides the best wartime documentation about the mining at and near what is now the Lost Sea Cave:

…I wish to have my son John J Sibert...detailed to assist me in the management of Two of the most essential and important nitre works in E. Tennessee[,] I have been here for six months organising my nitre works which have been producing from 50 to 100 per Day (of 24 hours) [...] from necessity I have had to devote my whole time to the business here 500 Miles from my family & home in Virginia--because I could not get the kind of man to conduct the business in my absense.... I made application to Capt [Robert H.] Temple, Supt of the 7th Nitre Dist Knoxville Tenn. to have my son detailed but he informed me that the detail was refused upon the grounds that a man could not be detailed out of Virginia to work in the Nitre works in Tennessee. As there are exceptions to all general rules cant you in this case of mine detail my son to come to Tennessee to take charge of one of my nitre works, or the management of boath of the works in my absense from the works, looking up provissions &c for the use of the nitre works.... My establishments are Now the most productive of any works in Tennessee or Virginia. In a few days I shall be able to produce per week 600 lb of nitre....we have nitre earth enough to work fifty men or more for Two or 3 years, to come—and according to my judgement—I have examined all the important Caves in Virginia & E Tennessee—and frankly say that I know of no such a field of nitre to operate in as I have. I have 56 hoppers that will hold 1300 B[ushels] nitre earth at one time and evaporating facilities to evaporate 3000 Gall of Beer per day. I now work 30 hands & could work 50 to advantage [...]. Without the proper assistance I shall next Month have to suspend my works, to visit home.... I have had a hard time of it here but yet as old as I am I willing to endure hardship...to the utmost of my physical powers to whip the Yankees and gain our independence.... I am surrounded here with infernal (so called union) men—who would like to see me fail but go ahead is my motto now and for ever until free from yankee power....

It is not clear if Sibert’s two saltpeter works were separate leaching sites for dirt brought out of Craighead Caverns or if his men were mining two caves. The other known saltpeter caves in Monroe County, Daugherty and Morgan, are several miles away, which makes it more likely that Sibert leached earth from only Craighead Cave. John J. Sibert (b. 1841)
was never detailed to help manage the Tennessee saltpeter operation. Instead, he remained as a soldier in the 5th Virginia Infantry. Although his father did not then know it, on August 9, 1862, young Sibert had been captured at Cedar Mountain, Virginia. He was exchanged the following December, to later suffer a head wound at Gettysburg and a second capture at Spotsylvania, May 12, 1864. It is uncertain if he survived the war.6

Little additional wartime data pertaining to Sibert’s saltpeter operation has been found. On February 13, 1863, the new superintendent of the 7th Niter District, Captain Thomas J. Finnie, requisitioned from the Confederate ordnance officer at Knoxville twelve percussion muskets, 240 cartridges, and an ammunition box, all “for the use of Twelve Men Employed at…the Craighead Cave.” Samuel McKinney (1845-1912), one of Finnie’s traveling agents, was in the Sweetwater—Madisonville area the following April and May. Then, about August 8, 1863, Nathaniel A. Pratt (1834-1906), the chemist at the Nitre Bureau’s 2nd Division office at Augusta, Georgia, paid $3 for “Horseshire from Nitre Caves to Madisonville.”7

The writings of miners at Craighead Caverns, made available during the 1900s, do not mention Ross, McCue, or Sibert. Charles Wesley Hicks (1842-1923), a local resident, after the war became a lawyer, living most of his life in Madisonville except a brief period in Topeka, Kansas, and his last three years in Dayton, Rhea County. His remembrances, written about 1922, probably have the most validity. He claimed he was “conscripted and detailed to make salt petre” and “Served from March 1861 to Sept. 1863—30 months.” His recollection as to the time employed may have been foggy because the Confederate conscript law was not enacted until April, 1862. His version of saltpeter making in Monroe County is as follows:

On account of periodical attacks of inflamitory rheumatism I did not volunteer but was detailed by our conscript enrolling officer, Abraham Steakley, to make nitrate of potash (salt petre)…. Four of us formed a company and furnished capital to put up works at the great Craighead cave. Seven others were detailed with us, eleven in all. We camped there and worked faithfully two years and a half until Federal soldiers came to Sweetwater…in Sept. 1863, when we tore down our works and scattered to our homes to prevent capture…. We ran heavy wires down into the cave with carriers for half bushel buckets and a wheel and cord at the top and at the two angles and going some distance along the cave. This for hauling out the earth and it worked well. From the mouth of the cave we made a plank shute down the hill to the head of a hollow about one hundred yards. We…put a cover on it. We made hoppers holding fifty bushels, ten for dirt and one for ashes, of four foot boards set in troughs…. Close by we put up a furnace with four kettles, two of fifty and two of seventy-five gallons capacity each. It was necessary to have a large amount of water to leach the earth and ashes. This we got from a spring about eighty yards further down the hollow, by erecting a scaffold and pump thirty feet high and running troughs on scaffolds up to the hoppers. Pumping proved to be the hardest and most disagreeable work in the whole business. It took about two hours to raise enough water for a day…. The nitre lye was boiled from early morning until about three o’clock in the evening, being dipped from the upper kettles to the lower ones as it became stronger, then it was lifted from the lowest kettle to a large trough where potash lye was mixed in until it ceased to make a white cloud of precipitate. In the course of an hour the precipitate settled to the bottom in a mushy lime, leaving the liquid clear. We then had a solution of potassium nitrate…. This solution was drawn off carefully into the kettle again and boiled down…. It was then thrown into a deep, narrow trough to “shoot.” Next morning nearly the whole of it would be a mass of needle-like crystals shooting in every direction in the trough. When drained and dried this was commercial saltpeter. As I now remember, we made about fifty pounds daily…. We camped at the works and worked regularly from Monday morning to Saturday evening, sometimes till dark. When we went home, we left someone to protect the works and keep the lye from running over the troughs and wasting.

Hick’s writings named other Craighead Caverns workers: Reverend G.H. Coltharp (b. c.1834), Jacob (b. c.1828) and F. Marion Kinser (b. c.1837), John Wilson (b. c.1842), Thomas Forkner (1830-1906), John Gallaher, Thomas Conner Bellamy (b. c.1835),
McKinney Walker, and A. L. or Alfred McKeehan (b. c. 1839).  

The “History of the Lost Sea” currently sold at the cave alludes to “an old diary” found “previous to 1934” which had been kept by the Reverend J. H. (not G. H. as Hicks wrote) Coltharp, the man “in charge of manufacturing gunpowder [saltpeter] in the Caverns.” The persons in possession of this “diary” during the 1930s as well as now are not revealed, but someone, perhaps Coltharp’s son George, made notes from it, or maybe even transcribed it. But, without seeing the original diary, the reliance of the data purported to come from it cannot be confirmed, although most of the names mentioned match census records. One more cave laborer was named, James Franklin Magill (1825-1887), who according to other sources was “decidedly opposed” to the war. One supplier of ashes was William McKeehan (b. c. 1825) and some of the men “boarded with a Mrs. Mercer,” who was perhaps Ann (b. c. 1820), the wife of farmer James Mercer (b. c. 1812).  

The amount of saltpeter made at Craighead Caverns during the Civil War is unknown, but it probably was enough to make it one of the top producers in East Tennessee. Records of nine deliveries by McCue and Siebert, May 20-August 30, 1862, show a total of 1,092 pounds, of which nearly 36% occurred in August. Tom Murrah, agent of the Southern Express Company, in seventeen transactions from May 25, 1862, to July 4, 1863, recorded that at least 3,653 gross pounds of saltpeter were shipped from Sweetwater to Knoxville. Surely, the majority of that amount came from Craighead Cave. Further, data is completely missing for October and December, 1862 and February, April-June, 1863, when the 7th Niter District was at the peak of its productivity. 

NOTES

1. Reba B. Boyer, Monroe County, Tennessee Chancery Court Records 1832-1887 (n. p., 1988), 63, 93; Sarah G. Cox Sands, History of Monroe County, Tennessee (3 vols., Baltimore, 1982-89), 1, pt. 1:507; Tennessee Cave Survey; J.W. M. Breazeale, Life As It Is; or Matters and Things in General (Knoxville, 1842), 131-34.


3. 1850 Census, Tenn., Franklin, 14th Dist., 211; 1870, Knox, Knoxville, 2nd Ward, 1; Billie Burks and Hall Burks, trans., Marriage Records of Franklin County, Tennessee 1838-1875 (Winchester, Tenn., 1979), 137; Reba B. Boyer, Monroe County, Tennessee Records 1820-1870 (2 vols., Easley, S.C., 1967-70), 1:53, 179; 2:134; Boyer, Monroe Chancery Court Records, 135, 136; John Marshall McCue Papers, Special Collections, Margaret I. King Library, University of Kentucky, Lexington; Citizens Papers (M346, Roll 622), J. Marshall McCue File. After the war Ross was a hotel keeper in Knoxville, Tennessee, and Marion, South Carolina. 1870 Census, Tenn., Knox, Knoxville, 2nd Ward, 1; Atlanta Constitution, Jan. 24, 1877.

4. Citizens Papers (M346, Roll 622), J. Marshall McCue File; Acts of the General Assembly of the State of Virginia, Passed in 1861-2 in the Eighty-Sixth Year of the Commonwealth (Richmond, 1862), 146; 1870 Census Va., Augusta, Pastures Twp., Summerdean P.O., 39; Margaret C. Reese, Abstract of Augusta County, Virginia Death Registers 1853-1896 (Waynesboro, Va., 1983), 207. “1861 D.D. Davis” is on the wall of Craighead Cave, but it is unknown if this man worked for Ross and McCue or was just a tourist.

6. Citizens Papers (M346, Roll 990), William G. Strange File; Letters Received by the Confederate Secretary of War 1861-1865, RG109 (M437, Roll 7), National Archives, File S (WD) 835; Tennessee Cave Survey; Lee A. Wallace, Jr., 5th Virginia Infantry (Lynchburg, Va., 1988), 158.


10. Citizens Papers (M346, Rolls 622, 727), McCue & Siebert, Tom Murrah Files.
A VISIT TO MAMMOTH CAVE IN THE WINTER OF 1876-7

Marlin F. Hawley

Mammoth Cave was discovered in the late 1790s and by the second decade of the nineteenth century had already become a tourist attraction. Continued exploration within the cave led to significant increases in its reported length, only adding to the mystique. By 1877, innumerable publications, including guidebooks and promotional tracts, made the cave famous on both sides of the Atlantic.1

The following description of Mammoth Cave comes from a hitherto unpublished letter, dated January 22, 1877, written by George B. Flint, an Oakland, California, druggist, to his younger brother Albert Stowell Flint. The letter was found among the papers of Albert’s son, Alfred T. Flint, in the Wisconsin Historical Society, Madison, Wisconsin. For more biographical details, see the sketch following the letter.

Flint does not give the specific date of his visit to Mammoth Cave, but it probably took place a few weeks prior to his letter, placing it in late December 1876, or perhaps more likely, early January 1877. As such, it belongs to the less common narratives of winter visits to Mammoth Cave. [See also Hovey’s “Mammoth Cave in March,” this issue.]

George Flint’s tour was a side trip on the return journey from Salem, Massachusetts, his birthplace, to California. The text that follows omits a lengthy description of Salt Lake City and its environs. I have transcribed it as written, retaining his occasionally gnarled syntax and grammar and most of his contractions. The letter was, as he explained at its close, written with some haste, which doubtless accounts for its stylistic shortcomings. For ease of reading, abbreviated material has been spelled out and placed in brackets in a few instances. Omitted material is indicated by ellipses.
the long next day. I was greatly surprised at the moderate charges and good treatment I received, in great contrast to the charges &c at Niagara Falls. Although I was the only passenger it was only $3.00 up and back and in summer is only $2.00. At the Cave they charge $3.00 per day at the Hotel, which seems to be well kept. For the short route with Guide $2.00 and long route $3.00.

We started off to the west of the R.R. and immediately commenced ascending a range of hills, well wooded, and through a country that must be very pleasant in summer, but was then dreary and uninteresting. I found it cold riding, though only my hands, feet, ears & nose suffered. We ascended until at a pretty good elevation, at a rough guess 1500 feet about Cave City. The road is a wretched one. We then began to descend, and reached the Hotel just after sundown. They had a roaring fire in the office and after warming myself, viewing some of the Eyeless Fish and other curiosities started with one of the Guides for the cave. Daylight was most gone when we started and we had our lantern lighted. We had four, much like a common one but without glass. A short distance in rear of the house we descended by a path into a cañon, turning back in the direction of the Hotel when we reached the bottom. There was a light fall of snow on the ground, just enough to whiten it. A hundred yards perhaps brought us to the yawning mouth, the floor descending steeply. Overhead was an arch of limestone from which little streams of water were trickling down and congealing below had formed a large ice cone. The path leads in on the extreme right. As we passed along the roof lowered gradually until perhaps 100 yards in, a wall obstructed the passage, and in it was an open door of iron like that of a prison, which is kept constantly locked. There is a very strong draft of air through this gate, inward at this time but outward in summer. The Guide requested me to hurry through, holding my light before me, which I did, and found the increase of temperature very great.

A short distance farther and we left our overcoats until our return.

Care is necessary in going along the Main Gallery on account of the many pits—dug by the Saltpeter miners, who worked here during the war of 1812 to 14. These workings extend in about a mile from the mouth of the cave, many of their timbers still remain apparently free from decay. The bottom which is now hard as rock, was then soft and the hoof marks of the oxen as well as the wheel marks are very distinct now, in places being several inches deep.

Near the mouth of the cave were millions of bats suspended from the walls and overhead, in some places only 3 or 4 together, and in others large masses of them. They hibernate here in great numbers. They kept up a continual squeaking. I knocked several down, but they didn’t come out their torpor at all.

We arrived shortly at the Rotunda, when I found why the Guide carried a knapsack he had. A bengal light was touched off, and threw a strong light into the recesses of the Rotunda. There was nothing particularly beautiful about it, merely an enlargement of the gallery in which we were travelling. This Main Gallery is six miles in length. From it not far from the entrance is Audubon’s Ave., which we did not explore. The gallery averaged about 50 feet wide, and forty high, the limestone worn away overhead so that in places great shelves of it extending from the sides, nearly met overhead, and then above, the gallery enlarged again.

Every now and then the Guide stopped to light up some dark chamber or some deep pit with his Bengal Lights, or oiled paper. The latter a good supply of which he had was particularly useful in a dome or pit. We left the Main Gallery after a while going off into a side Gallery, which we entered by a flight of wood steps. I will not describe the many places of interest as the guide book which I shall send you will give you a very good idea, and I am afraid I shall not have the time to go too much into detail. I must
mention however the Star Chamber, which is one of the prettiest if not the prettiest thing about the cave. We came to a good place to sit down and he requested me to do so, saying that if I wasn’t afraid to be left alone he would let me know how it seemed to be left alone in the cave. Blowing all the lights out save one which he took, he started off down a passage which descended to a lower level than the Gallery in which I was. When the light had nearly disappeared, he sang out to me to look up. I did so and was surprised. It looked exactly as though the roof of the cave was off, and I was looking at the sky above. The stars were not brilliant however, but just as they would appear on a hazy night. He then produced the illusion of the cloud passing over the heavens, and clearing off again, which was very natural indeed. Shouting to me to remain quiet he then disappeared altogether for some minutes. I could no more see than though I had been submerged in a lake of ink, and although I suppose it was as silent as could be, still it seemed as though there was a loud ringing in my ears, such as you fancy in a quiet dark room but much more marked. At length along the Gallery in the direction we had come I saw a faint light which gradually increased much like the dawn of day, and finally the guide with his light appeared again, the passage he had taken leading up into the Gallery again farther back.

The Grand Crossing struck me as being very grand, from the large size of the two Galleries composing it. The Main Gallery along which we were traveling, was crossed by another equally large, the bottom of the other being higher however some 10 to 12 feet. Our lights did not penetrate its mysterious depths.

Gorin’s Dome was a wonderful one. I looked into it from a small opening half way between top and bottom. The Guide threw in lighted paper which went sailing down in circles until it reached the bottom. Water was continually trickling down the walls of this dome, and the deposit continually going on gave it the appearance of being hung with cloth. We emerged from the cave at 7 o’clock having been in two hours. A nice supper awaited me, and after sitting around in the office a while, went to bed a roaring fire being built in my room, and which burned all night.

At 8 o’clock the next morning was ready for the long route with the same Guide. He is a colored man, they call him Matt. He says he has been at the cave 37 years acting as a Guide. There are three of them, one is always away in winter, but returns each season. Matt had a lunch along for this day’s trip. For a mile or so we followed the route of the previous evening, and then branched off. Mile after mile I followed my dusky companion along these mysterious old river courses, occasionally stopping, to light up and view some particular point of interest. A very beautiful one was the snow cloud chamber, when looking along the ceiling away from a strong light, it had the appearance of the sky when it is covered with white fleecy clouds. The Fat Man’s Misery is a curious place, and an uncomfortable one to go through. Was quite long and crooked. You walk in a narrow trench so narrow sometimes that you have to go along sideways. About waist high it widens out, and is arched overhead at times so low that you have to stoop down as far as possible. Here is a latitudinal section which will explain what I mean. Emerging from this, a large Gallery is entered called the Great Relief, and it is certainly a great relief to get into. Lake Lethe was so low that we used the boats there merely for bridges to cross at two points. At Echo River however we took a boat, a kind of mud scow on a small scale. It was moved by means of a grape vine on which sprouts several inches long were growing. At first the top of the Gallery was so low that the Guide propelled the boat by pushing on the rock overhead, but soon had to use a paddle as it grew higher. There were many little holes worn in the rock at the water line, and the waves striking into them as we sailed along made a noise much like the beating of a drum. The echo was magnificent. Matt kept up a succession of low musical notes, with an occasional shout which seemed
to travel for miles through the cave and return to us. I fired a pistol shot, and was astonished at the result. The firing of a battery of artillery, and a regiment of infantry, backed by the thunders of heaven could scarcely equal it. I repeated it several times, the sound like the shouting seeming to travel for miles to return to us.

Through Silliman's Ave, the Pass of El Ghor and Cleveland's Cabinet we arrived at length at Groghan's Hall and the Maelstrom, at the end of the long route, and 9 miles from the mouth of the cave. It was early yet, most parties not reaching this point until 12 o'clock and it was only a little after 10. Where there was nothing of particular interest I trudged along steadily after Matt and didn’t stop to rest every little while as he says most people do. We stopped at the usual place for lunch on our way back, arriving at 11 o’clock. Now for the first time I realized that it was not so very warm in the cave. The temperature is always at 59°. We had become quite warm with walking, and before we had done eating got quite chilled, and were glad to resume the journey as soon as lunch was disposed of, and lamps filled. On approaching Echo River, heard the echo of voices at the other end, and we shouted back and forth several times. On the boat I caught one of the crickets that inhabit the cave. It looked more like a spider. Arrived at the other end of the river there was no one there, but it afterwards proved as we surmised that it was the man who drove me up from Cave City, and another who stays at the Hotel.

From Reveler's Hall we went through the Corkscrew into the Main Gallery thereby saving a mile and a half in distance, but I think next time I would walk the mile and a half, rather than go through it. Was very crooked as its name implies, and seems to be all through detached boulders, which seem ready to fall in and close the passage. In several places it is so small that it is rather a tight squeeze to get through. Was upwards, very steep and brings the climber out finally, way up in one side of the Main Gallery where an opening would not be suspected, and from which descent is made over loose rock to the floor of the Gallery. We emerged from the cave around 1 o’clock having been in 5 hours. Had a cup of hot tea and then started back to Cave City, arriving just before dark. Had a good supper and bought some stereoscopic views of the cave.

The north bound train did not pass until midnight, and not caring to go to bed went over to the depot where the Hotel closed, though they offered to let me stay in the Hotel if I chose, waking the coloured boy when I wished to leave. The waiting room at the depot was very comfortable though small, and I settled back in a corner for a nap, but in a few moments a couple of tramps entered, followed shortly by others the night be cold, and I thought twouldn’t do to go to sleep or I should be relieved of my watch and other valuables. As we were due in L'ville at 4 A.M. didn’t think about it worth while to go into a sleeper, so didn’t have much of a rest that night. I had a letter of introduction of a leading Pharmacist of L'ville from one of my friends in New York, but wasn't there long enough to use it, or to see anything of the place.…

I have written rapidly and rather incoherently I fear but hope you will be paid for reading the letter. If I had more time would try and make it more interesting.

I sent Sunday’s Chronicle yesterday enclosing the guide book of the cave. Must close now and get to bed. If you can find time from your studies to write would like to hear from you.

from your [affectionate] brother

Geo. B

THE FLINT BROTHERS:
A BIOGRAPHICAL SKETCH

George B. and Albert S. Flint were descended from old Yankee families. The brothers, born to Simeon and Ellen Rebecca Pollard Flint of
Salem, Massachusetts, were two of seven children. As a young man, Simeon Flint apprenticed as a mason, but in later life he achieved success as a builder, a manufacturer of sewer pipe, and dealer in building materials in that city.

George Benjamin Flint, born on August 28, 1846, was the eldest of the Flint children. He received his early education in Salem, but apparently of restless character, at age 16 he went to sea out of Boston on a ship involved in the East India trade. His travels took him to various Asian ports, including Hong Kong. After a year at sea, George Flint arrived in San Francisco, where he found work as a clerk in a drug store owned by his uncle, Charles P. Pollard. He left his uncle’s employ in 1868, returning for a time to the east. By late summer of that year, he was back in California, where he again took up as a clerk, this time for druggist E.P. Sanford. Within a few years, George became a partner in the firm of Sanford, Kelsey & Company in Oakland, California. While thus employed, he also completed a professional course in pharmacy from the Pharmaceutical College of San Francisco. In 1878, Flint and Kelsey sold their share of the company to the senior partner and used the money from the sale to establish a store of their own. A decade later, George bought out his partner’s share of the business and became the store’s sole proprietor. The Oakland Tribune, in 1890, hailed Flint as “One of the Best Known Druggists on the Coast.”

Until the press of business affairs and his impending marriage rendered it difficult, Flint was an early and ardent supporter of the Oakland Light Cavalry, an area militia formed in 1878. He married Abbie L. DeGolia, of Placerville, California, in 1887. The couple had three children; according to the 1910 federal census George also supported his elderly widowed aunt. George B. Flint passed away in Oakland ca. 1921.

The letter’s recipient, Albert S. Flint, was born September 12, 1853. Like his older brother, he was educated in Salem, Massachusetts schools, but he took his formal studies much more seriously than had George and continued on to college, graduating from Harvard University with a degree in mathematics in 1875. Following graduation from Harvard, though, he, too, headed west to California where he briefly taught in the public school system. California did not have the attraction for him that it did for his brother and, shortly, he returned home to take up a course of studies in mechanical engineering at the Massachusetts Institute of Technology (MIT). Sometime thereafter, he left MIT for Princeton, where he pursued astronomy, studying under the noted American astronomer, Charles A. Young. Advanced study in astronomy continued at the University of Cincinnati, where Albert received his Master of Arts degree in 1880. He was employed by the U.S. Naval Observatory from 1881 to 1889. During his years living in Washington, D.C., he married Helen A. Thomas, of that city, in 1884; the couple had three children, two daughters and one son.

In 1889, Flint left the U.S. Naval Observatory and relocated with his family to Wisconsin, where Albert, known as Stowell Flint, began an assistantship in the Washburn Observatory at the University of Wisconsin. He remained on the faculty at Wisconsin for the remainder of his life. In addition to teaching and fundamental observational research in astronomy, Professor Flint, despite the fact that he spent many nights at the observatory, was active in local church and civic organizations and served for a time as secretary and editor for the Wisconsin Academy of Science, Arts, and Letters. He retired in 1920 but continued his astronomical research as time and age permitted. Albert died in Madison, Wisconsin on February 22, 1923.

George and Albert were close and kept up a regular correspondence through their adult lives. Many of these letters resulted from their travels and were often charmingly illustrated with hand drawn sketches.
ACKNOWLEDGMENTS

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NOTES


3. Many tourists reported the guides singing, which, as Flint was not so entertained, may have been dependent on the number and composition of tours. See Joseph C. Douglas, 1998, “Music in the Mammoth Cave: An Important Aspect of 19th Century Cave Tourism,” Journal of Spelean History, Vol. 32, No. 3, pp. 47-59.

4. Flint may have been referring to a series 26 stereoscopic views of Mammoth Cave made by Mandeville Thum, a medical doctor from Louisville, Kentucky, probably in 1876, and which were copyrighted on November 22, 1876, and again in February 1877, though this time without Thum’s name attached. There was also a set of 42 stereo views made by Charles Waldack in 1866. See Bob Thompson, 2006, The Mammoth Cave of Kentucky: A Catalogue of Noted Artists, Photographers & Writers of Mammoth Cave (updated July 2006).

5. Unfortunately, Flint did not specify the title. By 1877, several Mammoth Cave guidebooks had been published, including William S. Forwood’s 1875 volume, An Historical and Descriptive Narrative of the Mammoth Cave of Kentucky, 4th edition, and A Guide Manual to the Mammoth Cave of Kentucky, published in Glasgow, Kentucky, in 1876. Comparison of Flint’s descriptions of Mammoth Cave attractions and these guides offers no hints as which of these guidebooks he may have been referring, if either. Flint’s description of the effects of gunfire at Echo River is reminiscent of Bullit’s 1845 description, “The report of a pistol is as that of the heaviest artillery, and long and afar does the echo resound, like the muttering of distant thunder;” see Bullit, 1845 [1985 reprint], Rambles in the Mammoth Cave, p. 85, Cave Books, St. Louis, Missouri.


7. Ibid.


12. Among Albert Stowell Flint’s many publications are such titles as Observations of the Right Ascension of the Stars Observed with the Prism Apparatus, 1895, Madison; The Computation of the Times of Rising and Setting of the Moon, 1911, Northfield, Minnesota; and Observations for Stellar Parallax: 2, series 1898-1915, 1919, Madison.


14. Several of these letters are part of the Smithsonian Institution’s Archives of American Art. For a description of them, see http://aaa.si.edu/guides/site-sketchbooks/index.cfm/fuseaction/collection.Detailcollection/CollectionGuideID/798. George Flint is, incidentally, misidentified as a mining engineer. William C. Flint was the family’s mining engineer. Other of the brothers’ illustrated letters can be found in the Alfred T. Flint Papers, Wisconsin Historical Society.
Virginia Jean Laas’s 1998 book, *Love and Power in the Nineteenth Century: the Marriage of Violet Blair*, tells the tale of an independent, powerful nineteenth century socialite, Violet Blair Janin (1848-1933). Violet’s family, no strangers to wealth or fame, included George Rogers Clark, the Revolutionary war hero who founded the city of Louisville, Kentucky, and William Clark, who along with Meriwether Lewis led the Corps of Discovery to the Pacific Ocean. The Blair house, named for the family, still stands in Washington, D.C., serving as the official house for presidential guests. The Blair family’s fame even extends into the spelean world; Violet’s uncle, John Croghan, purchased the Mammoth Cave of Kentucky in 1839, eventually developing it into a preeminent tourist destination. During Dr. Croghan’s management of Mammoth Cave many new miles of passageways were discovered, primarily by his African-American slave Stephen Bishop, who became famous for leading daring and adventurous cave tours. Dr. Croghan also ran a rather unsuccessful medical experiment in the cave, keeping patients suffering from consumption, or tuberculosis, in the cave day and night in the hopes the subterranean air would cure them. He eventually succumbed to the very disease he was trying to cure, and left the property to his numerous nieces and nephews including Violet.

Despite inheriting the estate from Dr. Croghan, Violet avoided playing a direct role in managing Mammoth Cave for years, preferring to merely receive the royalty checks generated by hiring outside supervisors. This arrangement continued until her husband, Albert Janin, a judge from New Orleans, decided to become a trustee of Mammoth Cave. Before he became involved with Mammoth Cave, Albert was a disappointment to Violet because he accrued neither the wealth nor the political power that Violet thought befitting the husband of a Blair. It wasn’t until he gained control of the Mammoth Cave Estate that Violet finally began to respect him and show some devotion towards him. As such, Mammoth Cave provided an opportunity for Albert to redeem himself to the Blair family and to Violet. Eventually this twist of fate led to a Washington socialite helping her husband run a cave in rural Kentucky. This rather unlikely scenario provides a fascinating insight into love, power, and gender roles in nineteenth century America.

The extensive collection of letters written by Violet and Albert detail every aspect of their courtship, marriage, and life. In her diary,
Violet was brutally honest about her view of Victorian society and her dissatisfaction over her own marriage within the confines of that society. Long before they became entangled in the Mammoth Cave Estate, their marriage had been on rocky ground thanks to Violet’s haughty personality and her conviction that no man would ever be worthy of her. This was in a large part due to Violet’s good looks, as she was beautiful; five feet two inches tall, slender, with blue eyes and brown hair past her waist. Her nicknames included “sunbeam” and “La Belle Blonde.” Violet’s friend, Anne Scott, said she was “endowed with magic powers to attract men and bend them to her will.” After all, this was the girl who liked conquests so much that she coldheartedly flirted with the goal of acquiring a dozen marriage proposals before the age of twenty-one.

Violet continued to brush off suitors until Albert Janin came along. He was crafty enough to play to her intellectual side since Violet had studied many subjects including Dutch, Spanish, Latin, French, geometry, and geology. Violet was very calculating in choosing Janin, realizing that she loved him best of all of her other beaus, and that he had the most intelligence. She did complain that he was a southerner and a Frenchman. The couple were married on May 14, 1874, but from the beginning the marriage was troubled. This was in large part due to Albert’s failing business ventures and fruitless political races. After a relative claimed that Albert had lost $200,000 trying to build a canal in the St. Bernard Parish in New Orleans, Violet wrote in her diary that it seemed as if her life were over. “I cannot help feeling that he is not the man I thought him when I married… An enemy reading his letters & comparing things would say that he was either a knave or a fool… I think he has been foolish & excessively weak.” Albert subsequently lost a second congressional race in 1882, leading Violet to confide in her diary, “I love him more than I care to say sometimes…” but “My life is not what I had a right to expect.”

It seemed that the grand belle of Washington, who had her pick of so many men, had made a mistake. Violet wrote that Albert would have been perfectly content with all of the creature comforts that her wealth provided even if she wasn’t in the picture.

By the beginning of the twentieth century Violet seemed to take a less caustic view of her marriage, seemingly resigned to disappointment. “My own marriage has not been happy, Heaven knows, but I have stuck to my bargain like an honest woman.” She did recognize that none of her other lovers would have made her happy either, “Bert at least does not meddle with me—He lives his life, objectless, smoking, and reading newspapers, & I mine too busy to think & despair.” Just when it seemed as if the marriage between Violet Blair and Albert Janin was going to be a colossal failure, Albert finally found a business
proposition that garnered the approval of his wife. The couple’s saving grace was the Mammoth Cave of Kentucky that had been willed to the children of John Croghan’s siblings. Laas asserts, “The vehicle for this [marital] rejuvenation was Mammoth Cave.” She claims that through his business intervention in Mammoth Cave, Albert was able to prove himself to his wife and regain his self-esteem.

Although the property had not produced a profit in years, it did cause turmoil among family members. Bickering over how best to manage the estate had reached an acute intensity by 1900. Albert suggested to Violet that he should visit the cave on his way to Washington “to quietly observe how matters are managed there.” Albert certainly had his hands full in attempting to revitalize the Mammoth Cave Estate. In 1893 Horace Carter Hovey, the author of *One Hundred Miles in Mammoth Cave in 1880: an early Exploration of America’s most Famous Cavern*, wrote that the entire operation had fallen into disrepair. Hovey claims that a cave as grand as Mammoth Cave should hold interest to all Americans, but that the management of the cave dampened that interest. The party was taxed fifteen cents per mile on the Mammoth Cave Railroad and the hotel “if not literally dropping to pieces” was “far from luxurious or even thoroughly comfortable.”

Albert meticulously went over cave financial records and observed daily operations at the cave to give advice to the Croghan heirs. Albert had to tread carefully as Violet’s cousin, Daisey Nokes, points out in a June 1924 letter to Violet, because some of the heirs depended on dividends from the cave to survive. In 1901, Aunt Lucy asked that Albert become a trustee, which led to another family feud that lasted until 1904 when Albert was finally appointed to the position. This greatly pleased Violet; she felt that this provided him “a chance to show the family what is in you.” She viewed this newfound control as a “great victory,” and she was “very proud” of the manner in which he managed to win control of the cave. She liked that the family now depended on Albert, “I am glad to have them all know that you are much more than just agreeable—that you can do.”

Albert’s new role seemed to make up for any imperfections in her marriage, “[He] may not be an affectionate husband to me,” but “he has worked splendidly to carry out our will.” Albert threw himself into promoting, advertising, and expanding Mammoth Cave, and his efforts translated into larger profits than the heirs had ever before received. As Laas puts it, Violet could finally view Albert as a “Manly Achiever.” In her eyes, he had proved himself to her and to her family. Violet’s family did seem impressed with Albert’s management of the cave, probably in large part due to the better than average checks they were receiving from the Mammoth Cave Estate. One relative, Lucy C. Browne, wrote a very flattering letter to Albert highlighting the improvements he had made to the grounds:

I think we have done very well this dreadful year. The grounds must look pretty with the many new cottages under the trees in place of the old hotel and I should like to see the transformation. We must …. our souls in patience and not look for great results until after the war. I think you have been very successful and thank you very much for your able management on affairs in Kentucky through such a troubled period. With love to Violet, hoping she is well.

During the last decades of their marriage Violet and Albert continued to live separate lives. Albert worked at the cave, returning for brief visits to New Orleans, and Violet stayed in Washington to be with her mother. Although at first Mammoth Cave did not enable the couple to spend any more time with each other, it did seem to finally bring peace to their marriage. Albert maintained his independence, coming to Washington when he wished, and Violet continued her busy social schedule and involvement in patriotic organizations. Albert’s success gave a balance to their marriage that had been lacking in previous years, and as Laas explains Violet no
longer “railed against Albert” in her diary or letters.

In June, 1914, Violet received two severe blows; her mother, Mary Blair, passed away on the sixth of the month, and in the last days of the month Violet learned that Albert was very ill in Kentucky. She rushed to care for him at the cave, trying to convince him to return to Washington. Instead they ended up at what Violet described as a miserable, dirty Bowling Green hospital. Finally, Violet threatened to leave unless Albert agreed to visit doctors in Washington; he gave in and was diagnosed with a growth in his bladder. The malady required two operations on July 29 and August 13. Although the couple became increasingly distant after this incident, Albert never lost his affection for Violet, “The happiest days of my present life are those that I pass at the Moorings when I see you.” “I have never known or seen any girl or woman who made upon me the slightest impression of the possibility of her being more desirable as a life companion for me than you with your superior charm of body and mind.”

Although Albert seemed content to continue leading separate lives, Violet expressed a desire to spend more time with him, “I would rather be with you than anyone else in the world.” “As time goes on we need each other even more, I think. When are you coming?” Violet’s desire to be with Albert did not stretch so far that she was willing to live with him in rural Kentucky, which would have taken her too far away from the comfortable Washington life she was used to. Violet’s loneliness and desire to be with Albert became thematic in her letters to him. In 1920 she wrote, “I want you here at home, we are not so young as we were 40 years ago and we are entitled to see more of each other.” By the end of 1923, Albert’s failing health gave Violet another reason to want to be with him. According to his doctor, Albert at age seventy-five had “been confined to his room” and was “mentally unfit and wholly incapable mentally of making or entering into any contract or transacting any business at all.” Albert’s increasing senility only made him more determined to stay at the cave; he wanted to “die in harness,” while actively engaged in work. Rather than urging Albert to return to Washington, Violet made frequent trips to Kentucky. Harsh winters, primitive living conditions, and Albert’s rudeness made the trips very hard on her. Violet’s cousin Daisey wrote a sympathetic letter in December of 1923, “It seems too awful that you should not only have the horrible anxiety of Mr. Janin’s illness but besides so much discomfort.” When Violet left Kentucky in February of 1924, she admitted that she had “been very badly treated” but acknowledged that Albert’s illness was to blame. She claimed that “no rudeness, unkindness or profanity to me matters.” Violet at age 75 was much mellower than the young spitfire who wouldn’t have tolerated rudeness from anyone, much less a husband.

During her visits to Mammoth Cave, Violet began handling most of the business affairs of the cave. Her cousin, Spencer Browne, seemed in favor of Violet maintaining control of the estate. He claimed, “Since 1849 the Cave administration has drifted on, barely (if at all) maintaining the status quo.” Browne seemed to have faith in Violet’s leadership, “Now that you have matters entirely in your hands… and will direct your own keen and fertile mind to the bigger problem of demonstrating the priceless value of the Cave in advance of its sale.” Her family seemed to feel sorry for her since she was so out of her element. In a letter from Lucy Croghan Browne, she comments that Violet must be very anxious about her husband and burdened with business troubles and cave matters. Other family members continue to comment on the endless feuding among the Blairs. In a letter in June of 1924 Daisey Nokes mentions the bickering:

Sophia Horner is going to come by for your letter for Wyatt Allen and Lucy Browne. I suppose they are waiting in Kentucky to get their hands on the Cave...
when my Mother is gone. Did you ever see a copy of
the Croghan’s will which said, “The Cave to be sold at
auction to the highest bidder on death of last original
heir.”

Violet must have felt very out of place at
Mammoth Cave, since the area lacked the
high society and wealth she was used to
mingling with in Washington, D.C. Ironically,
during the last decade of the nineteenth
century, long before she moved to Mammoth
Cave, Violet joined an elite but aging sector of
Washington society described as the “cave
dwellers.” This group consisted of old
residents who were losing their foothold to
the nouveaux riche who were invading the
city during their gilded age. Their coping
mechanism was to become even more
exclusive and not to accept any new members
into their inner circle. Marietta Minnigerode
Andrews, a twentieth century author and
illustrator, called Violet the “Queen of the
Cave Dwellers” claiming that her “colonial
traditions…conservative standards…her
beautiful profile, have never changed; she lies
in the same atmosphere as in her youth.” One
can only imagine how put off Violet would
have been with the farmers and laborers she
encountered at Mammoth Cave.

In June 1925, Violet returned to
Mammoth Cave, staying with Albert
throughout the fall. Over the next few years
she adopted the practice of spending the busy
summer season at the cave and returning to
Washington in the winter. By 1925, Albert
had become very difficult to care for. One
caretaker wrote, “he is getting so bad that we
can’t do anything with him at all. There will
have to be something done. I have done all
that I can do. He just raves all night. He will
not listen to what we tell him. In fact he will
not let us do anything for him.” Letters from
the Blair family sympathetically discussing
Violet and Albert’s plight may have had more
to do with their financial stake in the cave
than genuine concern. Mary Sitgreaves wrote
a letter in September 1924 about visiting the
cave, and her grave concern that Kentucky,
with its hostile court system, might enable the
cave to be turned into a national park.
According to the letter Violet is “now bearing
the entire responsibility of the cave
management on her shoulders.” Sitgreaves
found it a tragedy that Violet had to leave her
comfortable home in Washington “with
congenial pursuits” to live in “squalid
surroundings at the Cave.” Near the end of
the letter Sitgreaves got to the heart of the
matter, explaining that the heirs are in
“imminent danger of loss of control of the
Cave property.” She suggested appointing an
agent to take over control of the cave before
“Janin becomes legally disqualified to act.”
Lawyers should be brought in, not from
Kentucky, but from Washington or Boston.
She summed up the situation by warning the
other heirs “that the only legal control of
Cave affairs is now in the hands of Mr. Janin
whose health and mind are waning fast.” “If
the owners do not soon find strong shoulders
to relieve Mrs. Janin…they may lose the entire
control and income from the Cave.”

Mary Sitgreave’s concerns were
justified; in 1924 the state of Kentucky began
to use the court system to legally gain control
of the cave. An article in the “Edmonson
County News” claims that during the trial to
determine the property value of Mammoth
Cave the heirs brought in expert witnesses to
testify that they would pay exorbitant sums of
money for the land. Major Brown, owner of
Endless Caverns in Virginia, testified he
would pay $3,333,500 for the cave. By now
the family seemed resigned to the fact that the
cave was going to be sold; they just wanted to
boost the property value as much as possible
before the final sale to the government. It
wasn’t until the fall of 1927 that Violet was
able to move Albert from Mammoth Cave to
Washington. Laas explains that Violet loyally
and tenderly cared for him until his death on
May 29, 1928. Prior to Albert’s death the
Croghan heirs fought tooth and nail to
maintain control of the cave. A.C. Swinnerton
writes that “the subject of a national park was
greeted on all sides with annoyance and
resentment—even counter propaganda.” After Albert died, Mammoth Cave held little importance to Violet, and she completed arrangements to sell to the federal government her family’s interests in the cave. On December 31, 1928, the transaction was completed for the sum of $446,000—not the millions the Croghan heirs had expected.

With Albert gone, and this chapter of her life closed, Violet began writing less and less in her diaries. Although she mourned his death, she was probably relieved to be rid of the burden the cave presented. It’s a pity she was never as interested in Mammoth Cave as her ancestor John Croghan was. If Violet had thrown her energy into the cave as she did with other philanthropic organizations such as Daughters of the American Revolution and the National Woman’s Suffrage Association she might have been able to boost the image and reputations of the Mammoth Cave Estate. When the property was finally sold it was a shabby relic of its once magnificent past. Violet’s lifelong concern with appearances would certainly have changed that. At the very least, the cave did for a brief time, serve the purpose of reuniting Albert and Violet. On January 14, 1933, Violet died where she was most comfortable, at her home on Lafayette Square, far away from Mammoth Cave.

NOTES


3. Ibid., 22.

4. Ibid., 37.

5. Ibid., 22.

6. Ibid., 73.

7. Ibid., 80.

8. Ibid., 115.

9. Ibid.

10. H.C. Hovey, "Mammoth Cave in March." *Science* 21, no. 531 (1893): 189-190.


12. Laas, 115.

13. Ibid., 116.


16. Ibid.

17. Ibid., 117-118.

18. Ibid., 118.


20. Laas, 118.

21. Ibid.


26. Laas, 118.


29. Laas, 119.


31. Laas, 119.

32. Ibid.
Caves have long been associated with mystery, fear, and...good health. Here are some past and present examples of underground attempts to improve health.

Two stone huts sit along the Violet City Lantern Tour route at Mammoth Cave National Park. These huts are what remain of the world’s first tuberculosis sanatorium. Dr. John Croghan set up this underground hospital in 1842 in hopes of curing the terminal disease then called consumption or phthisis. By January, 1843, 15 to 20 patients lived in the cave waiting for the cave’s healing powers to cure them. In 1843, Dr. Croghan wrote, “I am convinced they would all return to the land above with greatly improved health.”

He was wrong. Some of the patients died in the cave. Those who survived failed to recover, causing Croghan’s “resort for invalids” as he called it, to close in 1843.

What encouraged Dr. Croghan to attempt such a scheme? He wasn’t the first person to think Mammoth Cave had healing properties. Accounts of great health among slaves who mined saltpeter for gunpowder in Mammoth Cave in the early 1800s may have influenced him.

Ebenezer Meriam visited the Mammoth Cave mining operation during the War of 1812. He wrote, “During the whole time this cave was wrought in for saltpeter, there was no case of sickness among the numerous workmen. They all enjoyed excellent and uninterrupted health.”

Robert Montgomery Bird mentioned Mammoth Cave’s miners in his 1838 book *Peter Pilgrim; or a Rambler’s Recollections*. “The nitre-diggers were a famously healthy set of men: it was a common and humane practice to employ labourers of enfeebled constitutions, who were soon restored to health and strength, though kept at constant labour; and more joyous, merry fellows were never seen. The oxen, of which several were kept, day and night, in the cave hauling the nitrous earth, were after a month or two of toil, in as fine condition for the shambles as if fattened in the stall.”

In spite of the reports of healthy saltpeter workers, there was at least one illness in the cave. In 1814, Mammoth Cave manager Archibald Miller wrote to slave owner John Hendrick about a slave he had leased to work in the cave mining operation: “your Boy Tambo is very sick and I wish you to come over and see him…. I Have bled him Twice and will give him A swett to day I have got no medican at present.”

Even after the failure of the tuberculosis hospital, the Mammoth Cave air was believed to be good for the health. Horace Hovey stated in his *Guide Book to the Mammoth Cave* in 1887, “The air is slightly exhilarating and sustains one in a ramble of five or ten hours, so that at its end he is hardly sensible of fatigue.”

Dr. Charles Wright wrote in 1860, “short and easy trips have been known to effect a cure in chronic dysentery and diarrhea, where all other measures had failed. …It is not an uncommon occurrence for a person in delicate health to accomplish a journey of twenty miles in the Cave, without suffering from fatigue, who could not be prevailed upon to walk a distance of three miles on the surface of the earth.”

The cave–health nexus goes back long before people associated Mammoth Cave with good health. The healing properties of crushed stalactites were mentioned in Chinese
writings as early as the 4th century B.C. Cave formations are made of calcium carbonate, which is used today in antacids (if you get heartburn, don’t head to a cave for calcium carbonate, it’s easier to stop at the drug store and buy Tums or Rolaids). The Chinese also took powdered cave formations as sedatives, cough medicine, to stop bleeding, and to encourage milk production in wet nurses.

Europeans also used powdered stalactites. In the 1600s (possibly earlier) it was taken to strengthen broken bones and treat fever (the calcium-bone nexus is clear, but who knows where they came up with fever?). Powdered Mondmilch, another calcium carbonate cave formation, was eaten or used as a poultice to treat people and animals. It was believed to heal eye diseases, dry wounds, prevent mange, and get rid of evil spirits. In Europe, taking cave formations medically petered out in the 1700s. In China, “dragons’ teeth” (fossils from various animals) from caves are still used as heart medicine.8 I don’t know if any of this works or not, but instead of breaking cave formations to cure your ailments, I recommend sticking with modern medicine.

The idea of caves having the power to heal is still around. In former uranium mines near Boulder, Montana, people seek health instead of uranium. In the Free Enterprise, Merry Widow, and Earth Angel mines, people with various ailments sit and read, play cards, or chat while surrounded by radon gas, which they believe to be the healing agent in the “health mines.” The radon level at the Free Enterprise Mine fluctuates between 1100 and 2700 picocuries;9 the level at Mammoth Cave is between 60 and 400 picocuries.10 A one hour session at the Free Enterprise Mine costs $7.00 (as of 2007); a two hour trip in Mammoth Cave costs $12.00 (as of 2007), so you get more radon for your money at the mine.

The Free Enterprise Radon Health Mine has testimonials from guests (human, canine, and feline) who say the radon helped or cured their arthritis, carpal tunnel syndrome, lupus, multiple sclerosis and other disorders. A testimonial from Irving the cat states, “I’d like to tell all felines to go to the Mine. It sure changed my life around. My humans are doing great too!”11

The effects of radon are controversial. It is considered a carcinogen by the EPA, the World Health Organization, the National Academy of Sciences, and other health organizations. The National Academy of Sciences BEIR VI Report estimates 15,000 to 22,000 people die of lung cancer due to radon every year.12 The concern about radon is bad for business at the radon mines; visitation at the Free Enterprise Mine dropped from 5,000 people per summer season prior to 1978, to 400 people in 2000.13

Yet some scientists believe exposure to low-level radiation (including radon) is beneficial; this idea is called hormesis. Dr. Bernard Cohen, professor of physics and environmental and occupational health at the University of Pittsburgh, states his studies show U.S. counties with high radon levels have a lower lung cancer rate than counties with low radon levels.14 Toxicologist Edward J. Calabrese of the University of Massachusetts at Amherst believes that with hormesis, cells adapt to the stress of the radiation and go into repair mode.15

In the United States, radon tends to be viewed as more dangerous than healthy. Sitting in a mine to expose yourself to radon for your health is thought of (at best) as harmless but worthless, or (at worst) downright unhealthy. But in Europe, some doctors consider exposure to radon (or other things mentioned below) in caves to be legitimate medical treatment; they call it speleotherapy. The hypothesis is that negative ions from the radon reduce inflammation in the airways, which allows easier breathing for asthma patients.16 Aggtelek National Park in Hungary offers not only recreational cave tours for tourists, but speleotherapy for children with asthma in Beke Cave, which was declared a medicinal cave in 1965. Speleotherapy is also available in Szemlohegyi
Cave in Budapest. Dr. Tibor Horvath of the Department for Speleotherapy and Respiratory Rehabilitation at the Municipal Hospital in Topolca, Hungary, states that speleotherapy patients show long-lasting improvement, reduced request for medicines, and less need for hospitalization. A study of asthmatic children at Cave Javoricko and Zlate Hory mine in the Czech Republic showed 60% of the patients needed less medication and missed less school after one or more years of speleotherapy.

Gasteiner Heilstollen (Gastein Healing Gallery) in Austria charges 513 Euros (about $691 as of 2007) for three weeks of the “Classical Healing Gallery Cure” in a radon filled mine turned spa. Can’t afford it? Your Austrian or German National Health Insurance will cover part of the cost.

If you’re seeking a good dose of radon but don’t want to sit in a cave, you aren’t left out. You can soak in radon pools at the Radonia spa in Schlema, Germany. Spa employees claim the radon will not only cure your illnesses, but jazz up your sex life.

Radon isn’t the only thing believed to be a healing agent in caves. Salt caves in Eastern Europe are also used to promote health. The salt, like radon, is believed to give off negative ions that are beneficial. In Armenia, people suffering from allergies, asthma, and respiratory problems ride an elevator 700 feet underground into a salt cave called Republican Speleotherapeutical Hospital (the chamber is referred to as a cave, but at 700 feet underground it may be a mine). The Hospital’s director and Chief Doctor, Andranick Voskanyan, says, “The salt environment has an amazing healing impact on the respiratory system.” While taking in the healing properties of salt, patients pass the time visiting, playing ping-pong, strolling along the cave passages, and exercising. Treatment lasts three to nine hours a day, five days a week for a month. Before the collapse of the Soviet Union and government health care, the hospital was very popular, now few Armenians can afford it. The underground Ukrainian Allergologic Hospital and the Troilus mine in Romania also provide speleotherapy.

For those who can’t make it to salt caves or mines, artificial salt “caves” are created by covering the walls of a room with salt and blowing salt aerosol into the room for a treatment called halotherapy. This is available at the Versme Health Resort in Lithuania. Not going to Eastern Europe any time soon? No problem. Salt lamps that produce the same effect can be purchased to make your home into your own private salt cave.

Other factors believed to contribute to the healing power of caves are the stable temperature, high humidity, lack of air pollution, and the relatively high amount of carbon dioxide, which is believed to encourage deeper breathing and calm spasms.

There is evidence that cave air can reduce the severity of asthma for many people, but is the benefit worth the negative effect of radon? Do radon, salt or carbon dioxide in caves or mines cure or help other ailments? Evidence that caves help illnesses other than asthma is lacking; more research such as that done on asthma patients is needed. But in the mean time, we know caves tend to lack pollen and other allergens that plague us above ground. Caving is good exercise, fun, and rewarding—which makes us feel good. Considering that, the cave cure may not be a bad idea.

NOTES

1. Letter from Oren A. Beatty, Medical Director and Superintendent of State Tuberculosis Hospital, Louisville, Kentucky, October 13, 1954.

2. Letter from Dr. John Croghan to General Jesup, January 13, 1843.

3 Meriam, Ebenezer, Mammoth Cave.


17. Personal communication with Dr. Stanley Sides, member of the Speleotherapy Congress and attendee of the 12th International Speleotherapy Symposium at Aggtelek National Park in Hungary, September, 2001, April, 2004.


23. www.saltlamp.com

24. Beamon, Sylvia P. “Gone to the Salt Mines – Whatever For?” from Souterrains website, wwwlbs4all.nl/~jorbons/souterrains/art/saltrome.htm l.


26. www.saltlamp.com

CAVE CLIPPINGS

MAMMOTH CAVE IN MARCH.

BY H. C. HOVEY, D.D., BRIDGEPORT, CONN.

I have long been curious to see the great cavern amid wintry surroundings. The capricious season is not without charms to one who can appreciate nature's changing moods. As our train pulled out from Louisville we saw that the tumultuous yellow flood had wholly obliterated the falls of the Ohio, as well as the costly canal around them, and had inundated the broad flats by the great bend below to a breadth of twenty miles. The storms of rain and snow swept over the Kentucky hills that guard the line of the Louisville and Nashville Railroad, but could not wholly hide the rugged grandeur of their naked crags and pointed peaks; while the torrents, rolling southward between bright-red ocherous banks, were far more interesting than their dry courses could be in sultry August. There are said to be five hundred caves in Edmondson County, and several of these are lauded by their owners as rivals to Mammoth Cave. This petty jealousy cropped out in the remarks made to us on our arrival at the Glasgow Junction, where we had to change cars, to the effect that Green River had broken into Mammoth Cave so as to make its avenues impassable; that visitors were not admitted at this season; that the hotel was literally dropping to pieces and had been closed; and, in short, that we had better turn our steps in some other cavernous direction. This local jealousy has occasionally even taken the malignant form of wanton injury to the estate and ugly threats of violence to the manager. Whenever a grander cavern than Mammoth shall actually be discovered (which may sometime be the case), let its claims be allowed; but thus far it stands as the noblest specimen of its kind. As such it has an interest for all patriotic Americans. True, our interest is weakened slightly when we find ourselves taxed fifteen cents per mile on the Mammoth Cave Railroad — a tariff never relaxed by the Nashville company even for excursion parties of hundreds of passengers; and it is further impaired on finding the ancient hotel, if not literally dropping to pieces, yet far from luxurious, or even thoroughly comfortable. It is a great architectural curiosity as having been evolved from a log-cabin germ planted
in 1812, but it fails to meet the demands of the modern travelling public. While admiring the good taste that keeps the surrounding forest intact in its native wildness, we should appreciate better walks by which the woodland charms might be made more accessible. We would also respectfully remark that these are days when electric lights are quite generally used, in preference to tallow lamps, and nowhere would they be more serviceable than to illuminating the great subterranean realm of Mammoth Cave, as has long been done at Luray. It is our conviction that the owners of this splendid estate could make no more remunerative investment than by the timely adoption of these friendly suggestions.

And yet justice should be done to the improvements already made by the enterprise manager, Mr. H. C. Gunter, about the hotel and grounds, and especially within the cavern itself. One of the first localities we explored on this visit was Audubon Avenue, the first right-hand branch from the main cave, which when we last saw it was heavily encumbered with great fragments of limestone that made the going very tedious. These have all been removed at great expense, some of them being dammed up by a deep ravine, and others piled up in formidable, yet shapely, walls. One object of all this is to prepare the way for the practical cultivation of mushrooms on a scale equal to that at Frétilion and Méry, in France. Over $5,000 have already been spent in this work under the direction of skilled gardeners, and ultimate success is looked for. Another striking change accomplished recently is the opening for the public of what is to be known henceforth as Gunter Avenue, and which has hitherto been passable only for the guides and hardly for them. It is a wonderful fissure, or rather series of fissures, extending through solid limestone for 8,000 feet, as actually measured by us. The passage, until recently widened, used to be for a great distance only about eight inches wide. But by patching and underbrush, the opening under the oak opening, tracks were visible of rabbits, foxes, and wild turkeys. After going thus for several hundred yards, we were confronted by a wide chasm in the hillsides, into whose yawning gulf great mossy-grown forest-trees had plunged head foremost. Climbing under or climbing over their prostrate trunks, we gazed awe-stricken into the mightiest cavern-mouth I ever saw. The whole cavern is a single hall, which, by our measurement, is 1500 feet long, from 60 to 80 feet wide, and from 80 to 125 feet high, gradually curving from southeast to due south; the dimensions being quite uniform from end to end from top to bottom. The roof is decorated here and there by alabaster stalactites, and at the time of our visit it was also appropriated by myriads of hibernating bats, clinging in great clusters like swarms of bees. The floor was long ago gone over by the saltpetre miners of 1812, who left the rocky fragments piled in what might be described as storm belows lying across the cave, each being 40 feet long by the base and rising 30 or 50 feet above the true floor. At the extreme end the mass of nitrous earth seemed not to have been disturbed, over which we climbed to the very roof, and amid whose nooks we diligently sought a way of access to Mammoth Cave. We did not succeed; but subsequent outside measurements satisfied us that we had reached within 50 feet of the desired goal, and that by suitable excavation the connection might be made. Before leaving Dixon's Cave, I stationed Bishop at the inner end, while I gained a point midway where I could see the white sunlight as it was reflected from the snow, and then had him ignite three Bengal lights. The effect was indescribably grand as their brilliant illumination crept through the black darkness till it cast my shadow on the farthest sunlight itself, like a giant speck, and finally blended with the outer light, thus enabling me to take at a single glance the vast dimensions of what may be justly styled the most magnificent subterranean hall in the known world.

On returning to the hotel, we made our way by the mouth of Mammoth Cave and saw it encircled by trackless snow, its moors and vines spangled with silver, and the wild, pattering cascade falling from the rocks above to the rocks below as it has done for ages. And, turning away, I echoed with all my heart the guide's native exclamation, "It's a lovely old Mammoth Cave."

From Science, April 7, 1893, pp. 189-190.
Early Comments on Chattanooga Area Caves

Donald B. Ball

The personal travelogue literature of the nineteenth century is replete with accounts of the travelers’ impressions of visits to one memorable cave or another (though not infrequently a tour of Mammoth Cave) in the course of their excursions across America. An intriguing exception to this is a series of comments appearing in Benjamin F. Taylor’s *Pictures of Life in Camp and Field*. Among other observations regarding the people and region of post-Civil War Chattanooga, Tennessee, Taylor observed and documented several of the caves surrounding the town. As recorded by Taylor (1875:176-178):

All the region around Chattanooga is so rich in caves that it seems almost invested in a cellular tissue. You find them in unexpected places. Remove the little wash of earth at the base of a ledge and there yawns a cell, the entrance worn smooth by unknown feet in some forgotten time. In the sides of the mountains are caverns, often of great extent, and yet waiting the torch of the explorer. Lookout has two; to one of [pg. 177] them a large number of women and children fled for refuge, on the approach of the swarm from the Yankees’ northern hive, and there some of them are said to have died. This is of so great extent, and works its way into the gloom by passages so numerous and uncertain, as if it would feel out the secret of the mountain, that although adventurous boys—and what will they [sic; they] not dare to do!—have groped their way into it, yet its recesses remain a mystery. Some of these caves have figured in the story of the rebellion, from the “villainous saltpetre” they supplied. Others, within a half hour’s stroll of the heart of Chattanooga, that have evidently failed to awaken the lazy indifference of the former residents, had they been within Yankee reach would have been long ago explored and christened, had their little legends, and borne upon their rocky lintels the names of many a pair of pilgrims.

I visited one, where, perhaps a month ago, a discovery was made, that anywhere else but in the Front would have been a nine-days’ wonder. Here it survived nine minutes. The entrance to the cave is abrupt, and a tree trunk had been thrust down, perhaps by a curious Indian of the tribe of John Ross that once ranged those lovely valleys and raised “a far cry” from the summit of Mission Ridge; thrust down so long ago, that a dendrologist—a tough word for a writer of plain English—would be puzzled to class it. Well, one of our soldier boys, with an inch of candle in hand, brooded the trunk, as coolly as he would have mounted a mule, and slid down into the under world. His venture was rewarded, for far under the hill, upon a shelf of rock, he found the bones of a man, and beside him, within reach of the crumbling hand, an extinguished torch. The story was meagre but it was all there: “there lived a man;” he set out to explore that hollow artery of the mountain; he grew bewildered, wearied, and the light of his torch and the light of his life went out pretty nearly together. No matter for his name; he died so long ago that nobody remembers that he ever lived; they that mourned him have been mourned in turn. So, in caves and out of them, “runs the world away.” The soldier generously offered me a memorial bone,—say, of the forearm—as he told the story. I declined the bone but kept the story. But of course the boy managed to grave his autograph at the entrance of the cave, for the American man has a passion for scribbling. He begins by scrawling his name in every fly-leaf of his spelling-book—“Jim Boggs—his book”—he goes on by writing for the newspapers, and he ends by tracing that same illustrious patronymic upon everything he can reach...

Taylor’s comments are hardly a surprise in light of fifty some caves having been subsequently reported in Hamilton County, Tennessee, by Barr (1961) and Matthews (1971). It is certainly possible that Taylor visited caves in the Chattanooga area which have not yet been formally documented.
LITERATURE CITED


Many cavers have encountered occasional odd-seeming people with alternative mind sets about the fundamental nature of caves and the strange, mostly hostile para-humans who supposedly inhabit them. This book offers tantalizing insights into this parallel world, but although it is a useful library reference book, I found it unsatisfying. One special problem is that obscure publishers like Da Capo Books commonly lack hard-nosed editors who will require their hopeful authors to cut comprehensive but windy manuscripts (and subtitles) by 40% (Harpers did it to me, and the result was a much better book). This book is badly imbalanced, with comparatively little content that is relevant to the ordinary 21st century reader. Far too much space is devoted to the 17th century hollow earth delusions of Edmund Halley (of Halley’s Comet fame) and to hollow earth sci-fi of whatever century. John Cleves Symmes and Jules Verne are given their due, but discussion of Edgar Rice Burroughs’ Pellucidar novels seems excessive. Except for the largely forgotten “Koreshanity” (the subject of an entire chapter), little consideration is given to hollow earth delusions of the later 20th century which have long puzzled cavers but have influenced much modern science fiction. The supposed Rosicrucian caves of Mount Shasta are barely mentioned. The well-known Churchward, and other writings about subterranean Mu and Lemuria (except for all-too-brief mention of the Shaver Mystery) are missing, as are the musings of H.P. Lovecraft, reflected in the names of so many cave passages. It is almost as if Standish got tired of dealing with so much unsettling paranormality, and quit early. Or perhaps he is simply planning a sequel. There’s plenty of material for it, extending as far as deepest schizophrenia.


George Forrest Browne received his degree in theology from Cambridge in 1857 and was ordained in 1858. After some time as a parish priest, he returned to Cambridge. Well known as a distinguished archaeologist, he received an appointment as Professor of Archaeology and served in that capacity from 1887 - 1892. In the summer of 1861, while vacationing with his family at Arzier in the Jura Mountains (along the Franco-Swiss border) near Geneva,
Browne visited a limestone cave filled with permanent ice formations. Intrigued by the year-round presence of ice within the cave, he spent the next several years exploring and studying this and more than two dozen similar caves in the area. *Ice-caves of France and Switzerland*, published in 1865, is a detailed account of his investigations. The book is narrative in nature and Browne is extremely descriptive in his writing, sometimes to the point of complicating the flow of text and ease of reading. Much of the volume is devoted to descriptions of adventure and hardships during the course of his travels to various caves; although, detailed descriptions of the caves and ice formations are also present. Historical (from the author’s perspective) accounts of visits to several caves as well as a history of various theories of ice formation at these sites are also included. Online copies of this book are available at numerous websites and I recommend reading through portions of an online edition to gain a familiarity with the writing of the period prior to making a purchase. Individuals interested in historical aspects of caving may find much to interest them in this volume.


H. Dwight Weaver has been exploring Missouri caves since he was seven years old. By 1956, he was old enough to join the NSS. In touch with organized caving for the first time, he quickly joined the nascent Missouri Speleological Survey and began a lifetime of underground exploration in the state. There are approximately 6200 known caves in Missouri and the number continues to grow. This is the author’s sixth book on Missouri caves.

Weaver begins his odyssey through underground Missouri by placing the region in suitable historical context. The book opens with a brief description of the Ice Age megafauna that once roamed the landscape of what is now Missouri. This is followed by a consideration of the Paleo-Indians who had settled the area and the various archaeological investigations of their artifacts and burial sites.

As his story of Missouri caves unfolds, Weaver offers some tall tales of early settlers as well as a few bizarre stories about some of the more outlandish uses that pioneers found for caves. He also draws attention to the fact that Missouri was once known as “the Outlaw State” because of its many bank robbers—most notably Jesse James—and counterfeiters and describes the rich history of caves being used as hideouts. During the Civil War, people hid in caves to avoid conscription or as a refuge from raiding Guerilla parties. In the early part of the twentieth century, Missouri caves were home to many Ku Klux Klan meetings. And during the Cold War, Missouri’s civil defense authorities were interested in caves as potential fallout shelters. In a classified post World War II military enterprise known as Project Cavern, the Office of Naval Research actually surveyed many Missouri caves in an attempt to find a suitable site at which to construct a jet propulsion laboratory (for another intriguing account of military applications of cave resources, see Jack Couffer’s, *Bat Bomb: World War II’s Other Secret Weapon*, 1992).

Consideration is also given to the one-time importance of many Missouri caves as sources of saltpeter—an important ingredient in the manufacture of gunpowder—and to the various other domestic or economic uses that were found for many caves in the state. In this regard, caves were mined for onyx and guano, used as underground cold storage for long-
term preservation of food, as “barns” or “corrals” for housing livestock, and even as sites of experimental mushroom farms. They were also widely used by brewers and moonshiners. St. Louis, in particular, was home to a large number of breweries, which depended heavily on caves for the aging and storage of lager beers (for more detailed information on this particular aspect of Missouri cave use, see Hubert and Charlotte Rother’s *Lost Caves of St. Louis: A History of the City’s Forgotten Caves*, 2004).

In view of the fact that Weaver himself was a former show-cave operator, a relatively detailed discussion on the history of Missouri’s many commercial caves, as well as the state’s colorful cast of pioneering, show-cave entrepreneurs, is not surprising and speaks to the author’s own special interest in this aspect of Missouri history.

Two chapters are devoted to the historical development of Missouri’s organized caving activity and one to the mystique of caving. The latter is a particularly interesting chapter that is applicable to cave explorers of any generation. Readers should note, however, that this is not a book about the early history of cave exploration or of early survey and mapping endeavors. And there are no tall tales of legendary Missouri cave explorers—like Kentucky’s Stephen Bishop—to be found here. Nevertheless, an informative appendix provides details about Missouri’s 12 major cave regions, including salient surface features, a county-by-county cave count, and a brief description of one or more representative area caves. A bibliography of relevant reading is provided, each citation accompanied by a short note about its content.

Although discussion is clearly focused on caves of the “Show-Me” state, this shouldn’t suggest that only Missouri cavers would find something of interest here. *Missouri Caves in History and Legend* will appeal to anyone interested in the historical aspects of caves, especially in the era prior to establishment of organized caving activity anywhere in the country. The book is well written, very well organized, and quite informative. By gathering this material together in one publication, the author presents a great deal of interesting historical information that would otherwise be quite difficult to come by. It is also an excellent selection for sale by show-cave gift shops and will help to provide tourists with a greater appreciation of the rich and varied history of Missouri’s underground environment.

Apart from providing an interesting historical synopsis of Missouri caves, Weaver offers a view of how attitudes towards caves have changed over the past two centuries. A once pervasive sentiment that caves were essentially worthless pits—except, of course, for those from which something valuable could be harvested—resulted in widespread destruction of Missouri’s underground. Some of the most beautiful caves in the state have been irreparably damaged by reckless mining and prospecting operations, devil-may-care treasure hunting, a craze of wanton cave partying, and a growing lust for collecting speleothem souvenirs. In time, however, these trends eventually gave way to a more general appreciation of caves as valuable and irreplaceable natural resources and the author impresses upon readers the importance of safeguarding our underground heritage. As such, Weaver leaves his readers with an important conservation message, one that should be taken to heart by cavers everywhere.

**CONFEDERATE NITRE BUREAU OPERATIONS IN ALABAMA (2007)** by Marion O. Smith. Byron’s Graphic Arts, Louisville, TN. iii + 123 pages, including Sources and Index. $17 postpaid from Marion O. Smith, 2023 Bone Cave Rd, Rock Island, TN, 38581. Reviewed by Joseph C. Douglas

This work on the Confederate States of America’s Nitre Bureau activities in Alabama between 1861 and 1865 represents the
culmination of decades of research by author Marion O. Smith, the Dean of saltpeter cave historians, into the surviving records of the period, especially the Confederate Citizens Papers and various Confederate saltpeter cave, potash, and nitre bed payrolls, all housed at the National Archives. This archival research is supported by intensive field research at specific cave sites. Based on this research, Smith has produced the best and most complete study of the Nitre Bureau’s utilization of Alabama caves (and domestic sources and nitre beds) to produce gunpowder for the Southern war effort. He also sheds light on many related topics, including as the acquisition of related military supplies (sulfur, potash, charcoal, iron), the transportation difficulties confronting the C.S.A., and the identities and work lives of the miners engaged in extracting and refining the much needed nitrates.

Alabama was a major producer of saltpeter for the Confederate States of America throughout the Civil War. Divided into two nitre districts, Number Nine and Number Ten, by the Nitre Bureau, Alabama saltpeter production compared favorably with that of the five nitre districts in Virginia/West Virginia, the largest home-front source for the South. Smith’s work focuses on operations of the two Alabama districts throughout the conflict, including the disruptions caused by Union advances. After examining early nitre production in the crisis of 1860 and early 1861, prior to the establishment of the Confederate Nitre Bureau, the author discusses the history of each district separately, which is logical in that the Ninth District, centered around the Tennessee River and the northern tier of counties, focused exclusively (and successfully) on cave saltpeter production, while the Tenth District, comprising the central and southern parts of the state, turned equally to caves and domestic sources, such as old plantation houses and slave cabins. The latter district also put great emphasis on building artificial nitre beds.

For the Ninth Nitre District, Smith examines the activities of Superintendent William Gabbett and his assistants, the fourteen caves the government directly mined (as well as related potash and Epsom salts works), and the private contractors operating in the area. For the Tenth District the author also looks at the role and movements of the Superintendent, William Price, and his assistants. Smith includes fascinating information about the District Office’s agents, messengers, and purchases of everything from office supplies to needed metals to the steamboat St. John, refitted to transport Alabama saltpeter for the Nitre Bureau. The author discusses the private contractors who produced nitrates from caves and cliffs in the Tenth District and sold them to the Nitre Bureau. Lastly, he analyzes the Confederate artificial nitre bed production facilities scattered across seven sites in the state, which represented a large-scale, sustainable, solution to the saltpeter supply problem, but one which ultimately came too late for the Confederate States of America.

There are some blemishes in the work, as with any book. Some of the photographic images are blurred or appear to be too low in resolution, unfortunately including the image on the front cover. A Table of Contents is lacking. An expanded discussion of where the study fits into the historiography of the field would have been useful. But these are minor defects, more than made up for by the book’s positive contribution to American and spelean history. Smith’s work shows clearly that lack of gunpowder was not the cause of the South’s defeat, and that the Confederate Nitre Bureau worked mightily to adapt to, and overcome, the serious transportation and other difficulties which emerged during the war. These are important points for the larger history of the Civil War.

The book contains much useful material for anyone delving into the history of a specific Alabama cave, or of American caves more generally. For example, my own research in the history of American slaves and
the cave environment has profited enormously by reading this study. In sum, although it is not an easy read with a flowing narrative, due to the thorough archival research and fine detail, the book is essential for students of the history of American caves, the mining industry, the Civil War, and Alabama.


The Grotte Casteret, high on the Spanish side of the Pyrenees near the French border, is an ice cave (glacière) that was first reported by Norbert Casteret in a 1926 letter to E.-A. Martel, which gives it historical interest. It is the subject of a chapter in Casteret’s *Ten Years under the Earth*. Half of St. Pierre's book is a bibliography of the cave, with about three hundred references, arranged chronologically. Some references from before 1926 presumably just cover the vicinity of the cave. There are introductory sections on the history of the cave and caving in the area, as well as a description of the cave, illustrated by many nicely produced black-and-white photos. Several maps of the cave are presented, including Casteret’s 1926 map and the editor’s 1965 map.