From the Ground Up

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Notes

Preface
1. The two mining mascots were a fox named Copper and a bear named Coal; the third was a rabbit called Powder, honoring the snow that brings in tourist dollars.
3. For information on current mining districts and mining operations, see the Utah Mining Association’s Web site: http://www.utahmining.org.

I — Geology and Utah’s Mineral Treasures
William T. Parry

Notes

2—Generating Wealth from the Earth, 1847–2000
Thomas G. Alexander


4. Arrington, Great Basin Kingdom, 46.


8. Measures of Economic Changes in Utah, 70.

9. Ibid.

10. Ibid., 77.


15. Raymond, Statistics of Mines and Mining West of the Rocky Mountains, 1874, 256.

16. On the development and introduction of this technology, see Wyman, “Industrial Revolution in the West,” 39–57.

17. For the development of these facilities in Big and Little Cottonwood Canyons, see Charles L. Keller, The Lady in the Ore Bucket: A History of Settlement and Industry in the Tri-Canyon Area of the Wasatch Mountains, 183–224.

18. This story is taken from Keller, 183–84.

19. Ibid., 187–89.

20. Ibid., 190–94.


23. Arrington, “Abundance from the Earth,” 212–14. For a contemporary investigation of the development of mines at Park City, see John M. Boutwell, Geology and Ore Deposits of the Park City District, Utah.


From the Ground Up

26. On the importance of eastern capital to the development of western mining and other enterprises, see William G. Robbins, Colony and Empire: The Capitalist Transformation of the American West.
27. Arrington and Hansen, Richest Hole, 52, 71.
28. Ibid., 70.
31. For the statement on gold, see U.S. Bureau of Mines, Mineral Resources, 1926, Part I, "Metals," 427. The section on silver reads, "Most of the silver was recovered from the smelting of crude ore and concentrates; no silver bullion or precipitates were marketed" (ibid., 473).
32. Arrington and Hansen, Richest Hole, 75.
38. For a discussion of these rules, see Wyman, "Industrial Revolution in the West," 46–47.
40. Ibid., 252.
43. Utah Industrial Commission, Report, 1918 to 1920, 49–62.
44. Ibid., 271–72.
46. This information is based on an interview with Greg Fredde, president of the Utah Mining Association, 10 March 2003.
47. Utah Mining Association, "Utah Mining Facts: 'A Vital Part of Utah's Future.'" Percentage of payroll from mining in 2000: Emery (34.2), Carbon (23.3), Uintah (23.1), Duchesne (17.2), Sevier (59.7), Percentage of total tax base: Daggett (52.3), San Juan (44.6), Carbon (30.3), Uintah (29.5), Morgan (28.7), Sevier (28.2), Duchesne (23.8), Juab (22.4).
Notes


68. Greg Fredde, interview with the author.


3—General Patrick Edward Connor, Father of Utah Mining

Brigham D. Madsen

1. This article is taken almost entirely verbatim from Brigham D. Madsen, Glory Hunter: A Biography of Patrick Edward Connor. The material on Connor as a mining entrepreneur in Utah has been selected from the book with enough attention paid to his other major achievements as a military commander and political leader to give the reader an overview of his entire career. Patrick E. Connor spent most of his life developing mines in Utah Territory and well deserves the title, “The Father of Utah Mining.”


Notes

5. Church of Jesus Christ of Latter-day Saints, Journal History, 10 December 1863.
12. Union Vedette, 2 March 1864.
13. Union Vedette, 18 February 1864; Clayton, Letterbooks, reel 16; 3, 15 March 1864.
14. Union Vedette, 18 February; 17, 26 March 1864; Fox, “Patrick Edward Connor,” 72.
15. Ibid.
17. War of the Rebellion, 887.
22. War of the Rebellion, 355–803; Union Vedette, 8 July 1864.
24. Union Vedette, 1 July 1864.
28. Fred B. Rogers, Soldiers of the Overland, 114–15; Edward W. Tullidge, Histories, 2:76; B. S. Butler et al., The Ore Deposits of Utah, 362–63; Fox, “Patrick Edward Connor,” 74; Union Vedette, 22 April 1864.
30. Union Vedette, 16 April 1864.
31. Union Vedette, 16, 23 April; 27 May; 9 June; 13, 16 July; 29 August 1864.
33. Union Vedette, 13 July 1864.
34. Union Vedette, 16 September; 19, 22 October 1864.
35. Arrington, “Abundance from the Earth,” 204.
36. Ibid.
37. Union Vedette, 29 August; 13, 30 September; 15, 22 October 1864; The War of the Rebellion, 966.
39. Union Vedette, 22 October; 22 December 1864.
41. Tullidge, History of Salt Lake City, 228–29.
From the Ground Up

42. *Union Vedette*, 29 September; 6 November; 5 December 1865.
43. *Union Vedette*, 11, 30 June; 4, 16, 18 July 1866; *Rocky Mountain News* (Denver, Colorado), 7 July 1866.
46. For a record of some of Connor’s travels to Rush Valley, see *Union Vedette*, 24 July; 1, 7 August; 6 September; 28 December 1866.
55. P. E. Connor to E. M. Stanton, Salt Lake City, 29 April 1867.
60. Fox, “Patrick Edward Connor,” 111.
61. *Utah Reporter*, 17 May 1870. Connor’s Silver King Mine was in Rush Valley and should not be confused with a mine with the same name in Park City.
64. *Salt Lake Tribune*, 13 August 1870.
66. *Utah Reporter*, 8 March; 21, 28 May; 17 June 1870.
71. Murphy, *Mineral Resources of the Territory of Utah*, 20; *Salt Lake Tribune*, 31 October 1871.
73. Clayton, Letterbooks, reel 15, 16 August 1871.
76. *Corinne Reporter*, 19 April; 16 June 1871; *Salt Lake Tribune*, 18 April 1870.
78. Fox, “Patrick Edward Connor,” 111.
Notes


84. *Salt Lake Review*, 30 January 1872; *Salt Lake Tribune*, 21, 26 June 1872.

85. *Salt Lake Tribune*, 10 July 1872; *Corinne Reporter*, 8 July 1872.

86. Second Judicial District Court, Beaver County, Utah, Minute Book No. 1 of Notices, 45–49.


89. The chief silver mines at North Star were the Monahan, Gallagher, Keep, Shamrock, Last Discovery, Belfast, Aurora, and Montana. In the West District, Connor, Lighthall and Company were working the “valuable and extensive” Temperance and Medusa group of mines, whose ores assayed 80 dollars in silver to the ton. There were 300 tons of ore on the ground awaiting the construction of a smelter. The Flora, in the same district, and owned by Connor and Gallagher, had ores ranging in value from $40 to $700 to the ton in silver and 150 tons of ore on the dump awaiting processing. *Salt Lake Tribune*, 12 March 1873.

90. *Salt Lake Tribune*, 17, 19 August; 11 September 1873.

91. M. Livingston vs. P. Edw. Connor, Third District Court, Salt Lake City, Utah (1873).

92. P. Edward Connor vs. Robert J. Goldring et al., Third District Court, Salt Lake City, Utah, 25 September 1873.

93. Salt Lake County Recorder’s Office, Salt Lake County Abstracts, Book A2, Block 69, Plat A, 69, 202, 210, 221, 242, 265; Edward L. Sloan, ed., *Gazetteer of Utah and Salt Lake City Directory* (1874), 204.

94. *Utah Mining Gazette*, 10 February 1874.

95. *Utah Mining Gazette*, 17 January 1874.

96. Second Judicial District Court, Beaver County, Utah, Minute Book No. 1, 7 September 1874 to 17 September 1877, 18–19, 32–34, 41, 68–71; Minute Book No. 2, 16 October 1865 to 24 November 1879, 329, 331–32, 339–40, 355–56. These records are in the Beaver County recorder’s office.


98. *Salt Lake Tribune*, 3 September, 3 November, 9 December 1874.


100. *Salt Lake Tribune*, 26 April; 18 June; 8, 28 November; 5, 9 December 1874; *Utah Mining Gazette*, 13 June 1874; *Mining and Scientific Press*, 26 December 1874.

101. Amos Woodward et al. vs. P. E. Connor et al., Third District Court, Salt Lake City, Utah (1874).

102. Steven F. Nuckolls vs. P. Ewd. Connor et al., Third District Court, Salt Lake City, Utah (1874).


105. *Salt Lake Tribune*, 1 January 1875.


107. P. Edward [sic] Connor vs. Enos A. Wall, John W. Johnson, Charles Reed and H. W. Lawrence, Third District Court, Salt Lake City, Utah, 3 August 1875; and P. Eud. [sic] Connor vs. Hinam S. Jacobs, Third District Court, Salt Lake City, Utah, 27 October 1876.

108. P. Eud. [sic] Connor vs. Hinam S. Jacobs, Third District Court, Salt Lake City, Utah (1876).

From the Ground Up

110. Salt Lake Tribune, 3 October; 5, 10 December 1878.
111. Eureka Sentinel, 18, 21 January; 8 May; 25, 28 October 1879; Salt Lake Herald, 28 June 1879; Salt Lake Tribune, 11 May; 27 June 1879.
112. Salt Lake Tribune, 22 January; 20 April; 8 May; 27 June; 21 August 1879; Salt Lake Herald, 22 January; 19 April; 8 May; 21 August; 4 September 1879; Eureka Sentinel, 24, 25 April; 7, 8 May; 12 August; 22, 23, 25, 28 October; 19, 20 December 1879.
114. Fox, “Patrick Edward Connor,” 88–89.
115. Salt Lake Tribune, 1 January 1879.
116. King, Statistics and Technology of the Precious Metals, 447; Salt Lake Tribune, 8 March; 11 May; 4 September; 8 November 1879.
117. Leonard S. Osgood vs. P. Edu. Connor, Third District Court, Salt Lake City, Utah (1880); Salt Lake Tribune, 3 September 1880. Another lawsuit of 16 July 1880 in the Third District Court, John S. Barrett and Oscar V. Walker vs. P. Edward Connor, was dismissed under the statute of limitations because the suit was not filed within the prescribed four years allowed.
118. Salt Lake Tribune, 1, 24 January; 24 February; 25 July; 18 August; 13, 16 October 1880; Western Mining Gazetteer, 18 August; 22 September; 3 November 1880; Engineering and Mining Journal, 21 August; 21 November 1880; Daughters of Utah Pioneers, History of Tooele County, 343.
119. Western Mining Gazetteer, 18 August 1880; Salt Lake Tribune, 13, 16 October 1880.
120. Salt Lake Tribune, 13 October 1880; Fox, “Patrick Edward Connor,” 89.
121. Salt Lake Tribune, 20 October 1880.
122. Eureka Sentinel, 20 October 1880; Salt Lake Tribune, 1 January; 25 July 1880.
123. Fox, “Patrick Edward Connor,” 89–90. Connor, “one of the original locators of mines in Beaver County, after an absence of seven years, paid a visit to the Star and Frisco districts” on 31 August 1880. Salt Lake Tribune, 2 September 1880.
125. Charles E. Mitchner and John R. Kelly vs. Great Basin Mining and Smelting Company and P. Edward Connor, Third District Court, Salt Lake City, Utah (1881).
126. Lawrence Bethune vs. P. Edward Connor, Third District Court, Salt Lake City, Utah (1881).
127. Salt Lake Tribune, 4 January; 19 March 1881.
128. O. J. Hollister, Resources and Attractions of Utah, 31; Salt Lake Tribune, 4 January; 19 March 1881; Western Mining Gazetteer, 29 January 1881.
133. The Utah Commercial. Article was quoted in the Eureka Sentinel, 11 July 1882.
134. Salt Lake Herald, 24 April 1887.
136. Salt Lake Tribune, 30 March 1887.
137. Tooele County Recorder's Office, Deed Record, Book HH, 620.
138. Salt Lake Tribune, 1, 22, 28 January 1891.
140. Salt Lake Tribune, 17, 18, 19, 20, 21 December 1891; Salt Lake Herald, 19, 20, 22 December 1891; Deseret News, 19, 20 December 1891; San Mateo Times Gazette, 26 December 1891.
141. Salt Lake County, Probate Court Records.
Notes

142. Salt Lake County Clerk’s Office, Utah, Estates, Books M1, N1, 01, 1891–94 and Misc. Dates, 73–80, 387–90, 479.
143. Millennial Star: 606.

4—The Stories They Tell
Carma Wadley
1. T. H. Watkins, Gold and Silver in the West, 16.
3. Ibid.
7. Ibid., 292.
9. Kate B. Carter, Heart Throbs of the West, 10:134. The Three Nephites are mentioned in the Book of Mormon (3 Nephi 28) as requesting, like John the Beloved in the Bible, to remain on the earth to help people until Christ returns.
11. Ibid.
23. Dean Nolan and Fred Thompson, Joe Hill: IWW Songwriter, 5. For more information on Joe Hill, see Philip S. Foner, The Case of Joe Hill; Philip S. Foner, The Letters of Joe Hill; Gibbs M. Smith, Joe Hill.
24. Lion, UPI news story.

5—Saline Minerals
J. Wallace Gwynn
1. J. L. Clark, “History of Utah’s Salt Industry, 1847–1970” is a well-documented reference detailing the history of Utah’s salt industry. Unless otherwise noted, the majority of the information for
From the Ground Up

this section on the history of salt production from Great Salt Lake comes from this reference with permission from the author.

4. Ibid.
6. Ibid.
7. Ibid.
12. Ibid.
15. Ibid.
16. Ibid.
18. Utah Mining Association, “ICM Kalium Sold.”
23. Unless otherwise noted, the information for this section on the history of salt production from east of Nephi in Juab County comes from J. L. Clark, “History of Utah’s Salt Industry,” with permission from the author.
27. Unless otherwise noted, information for the history of salt production from the Redmond area comes from three sources: J. L. Clark, “History of Utah’s Salt Industry”; R. M. Young et. al., Sevier County, Utah: Past to Present (some sections by Verle Peterson and Milo and Neal Bosshardt); or Neal Bosshardt, “Redmond Minerals, Inc.”
Notes


30. This section on the history of potash production from the Cane Creek area is based on information provided by Rick York, general manager of Moab Salt LLC, on 15 August 2001 unless specified otherwise.


32. Evans and Linn, “Fold Relationships within Evaporites.”

33. Untitled Utah Geological Survey report; no date or author.


36. Daniel Jackson, “Solution Mining Pumps New Life into Cane Creek Potash Mine.”


6—Coal Industry

Allan Kent Powell


7. For a full account of this story, see Nancy J. Taniguchi, *Necessary Fraud: Progressive Reform and Utah Coal*.

From the Ground Up


10. For statistics on the number of miners who lost their lives in the coal mines, see Fred Civish, The Sunnyside War. While the book is a very interesting and readable fictional account of the 1922 coal miners strike in Sunnyside, the appendix includes a list of names, dates, and mines for 1,383 coal miners who lost their lives in Utah mines from 1896 to the present. The author notes that the compilation of this list is a work in progress because more and more names will probably be found in obscure records—especially those killed before Utah became a state in 1896. Civish also includes in his list of twentieth-century casualties one poignant and instructive entry—“The Unknown Miner Many Dates Many Mines.” It is also impossible to list the thousands of miners whose lives were cut short either by suffering accidents inside the mines or developing respiratory diseases such as black lung from years of breathing coal dust.


14. Eastern Utah Advocate, 3 December 1903.


21. For a more detailed history of this strike, see Powell, The Next Time We Strike, 37–50.

22. Salt Lake Herald, 16 February 1901.

23. For a more detailed account of the 1903–4 strike, see Powell, The Next Time We Strike, 51-80. For an account of the role of the Utah National Guard in the strike, see Richard C. Roberts, Legacy: The History of the Utah National Guard from the Nauvoo Legion Era to Enduring Freedom, 47–55.

24. For accounts of Mother Jones, see Autobiography of Mother Jones, ed. Mary Field Barton; Dale Fetherling, Mother Jones the Miners’ Angel; and Elliot J. Gorn, Mother Jones: The Most Dangerous Woman in America.

25. Powell, The Next Time We Strike, 88–89.

26. Ibid., 91–93.

27. For two excellent accounts of the Ludlow massacre, see George S. McGovern and Leonard F. Guttridge, The Great Coalfield War; and Zeese Papanikolas, Buried Unsung: Louis Tikas and the Ludlow Massacre.


33. Ibid., x.

34. Ibid.

35. Watt, History of Carbon County, 183–99. These are the pages of chapter nine entitled, “The Coal Camps.”


39. Utah Geological Survey and Department of Natural Resources, 2001 Annual Review and Forecast of Utah Coal Production and Distribution, 1. Coal consumption is broken down into 12.48 million tons for power plants within Utah, 7.42 million tons for domestic power plants outside the state, and an additional 2.4 million tons exported to Pacific Rim countries.

40. Ibid. It should be noted that while production increased dramatically from 1982 to 2001, the price per ton the coal companies received dropped significantly from $29.42 in 1982 to $17.76 in 2001.

41. Ibid., 4.

42. Ibid., 3.

7—URANIUM BOOM
Raye C. Ringholz


From the Ground Up

18. Howard Balsley (speech before the American Mining Congress on 23 September 1952).
23. Interview with Wallace Bennett.
24. The Soviets resumed their nuclear tests in 1961, and in 1963 the Limited Test Ban Treaty authorized underground testing only.

8—Beryllium Mining
Debra Wagner

1. Sources for the information on bertandite mining come from the files of the Brush Resources Company, P.O. Box 815, Delta, Utah 84624. The information in those files came from Leland J. Davis, geologist, retired; Jack C. Valiquette, plant manager, retired; and John R. Wagner, mine supervisor.

9—Iron County
Janet Seegmiller

1. York Jones was a major contributor to this chapter on iron mining. Jones is a mining engineer who worked more than 40 years in the ore bodies of Iron County. His research extends through four major time periods of mining and other historical subjects. He and his wife, Evelyn Kunz Jones, have coauthored three books about the pioneers and government of Cedar City. Jones provided information for Graham D. MacDonald III’s book, The Magnet: Iron Ore in Iron County Utah.
3. Some resource books which explain the geology of southern Utah are these: William Lee Stokes, Geology of Utah; Herbert E. Gregory, Geology of Eastern Iron County, Utah; and Halka Chronic, Roadside Geology of Utah.
7. “Journal of George A. Smith, President of the Iron County Mission,” vol. 2 (28 April, 3 May, 6 May 1851).
9. Details of the difficulties and different companies are discussed in Morris A. Shirts and Kathryn H. Shirts, A Trial Furnace: Southern Utah’s Iron Mission.
Notes

11. The iron ore from which iron and steel are made is an oxide, a compound of iron (Fe) and oxygen (O). Common forms—hematite (Fe₂O₃) and magnetite (Fe₃O₄)—are found in natural deposits. To produce iron, oxygen atoms are separated from iron ore by reduction, usually by causing the oxygen to react with carbon, hydrogen, or carbon monoxide, leaving the iron free as a metal. In steelmaking, the ore is smelted, producing pig iron and slag, which contain the oxidized and unreduced substances. In the 1850s an iron furnace master was like a chef with a mental file of iron recipes, and he improvised as he worked, adding a dash of one ingredient or another. The resulting pig iron varied in quality but was generally usable. In Cedar City, the British method of using coke was tried, even though it was relatively uncommon in the United States. Coke was coal reduced in covered piles or burned in closed kilns. Ironworkers also used charcoal made by burning wood in kilns, as was done in the beehive kiln at Irontown. Exhaustible forests limited the use of charcoal.

The Deseret Iron Company used a simple blast furnace, charged or filled with ore, fuel, and lime. Alternating layers of ingredients were added in measured lots when flames broke through the previous ones. Compressed air injected into the furnace by tuyeres placed on either side or in back formed the blast and made the furnace burn hotter. Air was compressed by water or steam power. Molten iron sank through the charge to the bottom of the furnace and collected in a pool. Slag drained off the top continually, but at intervals the furnace operators broke out a clay plug at the base of the hearth and drained molten iron into sand molds, forming iron “pigs” or bars, hence the term pig iron. Processes such as melting the pig iron in a cupola or puddling furnace further refined it and allowed it to be shaped by hammering for “wrought” or “bar” iron. Castings produced useful articles such as hand irons, cooking pots, tools, machinery parts, or wagon wheels.

14. The bell called the people of Cedar City together for church services, funerals, dances and plays; fires, floods, and other dangers; and all community celebrations. It is now at the Iron Mission State Park in Cedar City.
16. When the men from Iron County reached the mines, no miners were there. The settlers had brought no picks or shovels but were not willing to return empty handed. They looked for ore to load in their wagons and located a rock slide which looked like lead ore. The deposit was far up a hillside, and they had no way to carry the ore. Undaunted, they took off their buckskin trousers, tied up the waists, filled them with ore, slung one leg over each shoulder, and carried the load down the hill. The lead was forged into bullets in readiness for the invading army. William R. Palmer, “History of Iron County,” William R. Palmer Collection, box 22, 1922.
17. Brigham Young to Isaac C. Haight, 8 October 1858, Brigham Young’s letterbook, MS f219, #8, p. 433.
22. This national historical site was given to the State of Utah by the Cedar City chapter of the Sons of Utah Pioneers and is maintained by the Iron Mission State Park, Utah State Parks and Recreation.
From the Ground Up

23. John C. Cutler, who later became governor of Utah, was married to Thomas Taylor’s daughter.
26. Ibid., 124, 131–32.
28. MacDonald, The Magnet, 13–15. The Utah Iron Ore and Steel Corporation also built a small steel plant in Midvale, Utah, in 1915. Since it survived on government contracts during World War I, the plant closed when the war and the contracts ended.
29. Quoted in MacDonald, The Magnet, 16.
30. Iron County Record, 20 June 1946.
33. Iron County Record, 17 May 1951.
35. MacDonald, The Magnet, 47.
36. When the Blowout pit closed in 1968 at a depth of 625 feet, 7,168,047 tons of hard magnetite ore had been mined with an average iron content of 60 percent iron (Fe).
42. Grant Tucker, formerly of Cedar City, contributed to this section, with additional information provided by Clemont Adams. Grant Tucker, “Notes on Iron County Coal Mining,” in author’s possession, 29 August 1994; Gregory, Geology of Eastern Utah, 145–50.
44. Tucker, “Notes on Iron County Coal Mining,” 1.
45. Paul Averitt, Geology and Coal Resources of the Cedar Mountain Quadrangle, Iron County Utah, 54.
46. Ibid., 60.
47. William C. Adams, “History of Coal Mining in and around Cedar City,” interview by Clemont B. Adams, 7 July 1965, typescript in author’s possession.
Notes

48. Iron County Record, 28 November 1913, 1.
49. This may have been the same two-story cabin used by Francis Webster, Henry Lunt, and Christopher Arthur as a hideout during the polygamy raids in 1887. It must have been renovated if it was the same structure. Pictures of the Corry Hotel/boardinghouse at the Iron County Coal Company mine taken in 1918 show a large frame structure with glass-paned windows.
50. L. W. Macfarlane, Dr. Mac: The Man, His Land, and His People, 223–24 (2d edition); Salt Lake Herald Republican, 13 November 1916, 10; Iron County Record, 18 November 1913; 8, 22 February; 12 April; 26 July; 15 November 1918.
51. William C. Adams interview, 7.
52. The height of the face of the coal mine is stated as 11 feet in the Iron County Record, 22 July 1937, and 15 feet in the Iron County Record, 14 October 1937. Grant Tucker, son of Guy C. Tucker, says the face was opened up to 15 feet, with two clay seams in the coal seam, one about 18 inches from the roof, and the other about 24 inches from the floor. Tucker, “Notes on Iron County Coal Mining,” 1; “Dr. A. L. Graff Locates Long Lost Coal Mine Of High Coking Qualities,” Iron County Record, 22 July 1937, 1. Averitt in Geology and Coal Resources of the Cedar Mountain Quadrangle, 59, places the coke ovens near the Old Kanarraville Mine. However, the ovens are adjacent to the Graff Kleen Koal Mine, which dates the opening of the mine at this site to the 1880s.
55. Ibid., 2.
57. Averitt, Geology and Coal Resources of the Cedar Mountain Quadrangle, 60–61.
58. Edward H. Hahne is the major contributor to the section on silver mining. He was general manager at the Escalante Silver Mine.
59. Placer means there were nuggets large enough to be found through panning or washing for gold in streams or, more likely, in washes that were wet in the spring.
60. “Sheriff’s Sale,” Iron County Record, 10 September 1904.
62. Stateline Oracle, 28 November 1903 (microfilm available at Sherratt Library); Iron County Record, 9, 30 January 1903; 13 February 1904.
63. Iron County Record, 3 March 1905.
64. Iron County Record, 30 April 1909; 17 February 1911.
65. The name Deer Lodge, from Deerlodge Canyon in eastern Lincoln County, Nevada, is also associated with this district.
67. Iron County Record, 11 January 1918.
68. Gold Guidebook, 57; also information given to the author by Dr. Blair Maxfield, 8 September 1995.
74. Iron County Record, 18, 25 December 1929; 18 January 1930.
75. Iron County Record, 10 July 1903, 4; 30 January 1904, 1; 2 April 1904, 1. Further mining was done during World War I. Iron County Record, 25 October 1918.
76. Iron County Record, 11 Mar 1910.
10—Bingham Canyon
Bruce D. Whitehead and Robert E. Rampton

2. The following story, including quotations, comes from W. W. Gardner, interview with Heber J. Hart, in Kennescope (a company magazine of Kennecott’s Utah Copper Division, November 1974), 2; Kennecott Copper Corporation Archives.
3. Connor was still a colonel and commander at Fort Douglas in 1863. He was appointed major general of the Utah militia in 1870. T. A. Rickard, The Utah Copper Enterprise, 15. See also chapter three of this volume and Brigham D. Madsen, Glory Hunter: A Biography of Patrick Edward Connor.
4. Those present were Archibald Gardner; George B. and Alex Ogilvie; Hugh O’Donnell; M. C. Lewis; Dr. Robert K. Reid, surgeon at Fort Douglas; Col. Charles Jeffrey Sprague, paymaster at Fort Douglas; Samuel Egbert, farmer and stockman in West Jordan; Neil Anderson, Swedish immigrant working in Bingham Canyon; Patrick Edward Connor; Richard Colter Drum; along with William A. Hickman, General Edward McGarry, Captain Daniel McLean, and Colonel Robert Pollock, officers at Fort Douglas; H. O. Pratt, telegraph operator; John Hardcastle; Alex, Henry, and Thomas Bexsted; James Briniger; James Finnerty; G. W. Carleton; M. J. Jenkins; H. O. Pratt; Robert Pollack; David McLean; and H. B. Eldred. Gardner, interview with Hart, 3; Lynne R. Bailey, Old Reliable, 17.
5. The name West Mountain was selected as the English translation of the Indian word Oquirrh.
6. Arrington and Hansen, Richest Hole on Earth, 12.
7. Rickard, Utah Copper Enterprise, 16.
11. Ibid., 51.
12. Arrington and Hansen, Richest Hole on Earth, 11–12.
13. T. A. Rickard, A History of American Mining, 191. Colonel Wall’s military title was given to him by his friends.
14. Rickard, Utah Copper Enterprise, 17.
18. Arrington and Hansen, Richest Hole on Earth, 18.
19. Untitled manuscript, Kennecott Copper Corporation Archives, c. 1957.
20. Salt Lake Tribune, 1 January 1899.
22. Deseret News, 5, 14, 15 November 1906.
24. Jackling earned the rank of colonel by his service to Colorado Governor J. H. Peabody with the Colorado National Guard from 1903 to 1904 and service to Utah Governor William Spry with the Utah National Guard from 1909 to 1913. Consequently, he is frequently called Colonel Jackling.
Notes

25. Bailey, Old Reliable, 42.
26. Ibid.
27. Untitled manuscript, Kennecott Copper Corporation Archives, c. 1957.
28. Ibid.
29. Arrington and Hansen, Richest Hole on Earth, 37.
30. Ibid.; italics in original.
31. Ibid.
32. Parsons, Porphyry Coppers, 68–69.
33. Ibid.
34. Bailey, Old Reliable, 53.
35. Arrington and Hansen, Richest Hole on Earth, 52.
36. Bailey, Old Reliable, 32, 46.
38. Parsons, Porphyry Coppers, 79.
39. Arrington and Hansen, Richest Hole on Earth, 64.
40. Ibid., 64–67; Parsons, Porphyry Coppers, 50.
41. Bailey, Old Reliable, 63.
43. Ibid., 292.
44. Bailey, Old Reliable, 98.
45. “The People Who Made Kennecott,” Deseret News, 27 March 1985, C1. The IWW was reputed to have socialist, anarchist, or communist ties and was seen as among the most violent of the emerging labor organizations.
46. A padrone, literally “master” or “boss” in Italian, was a contractor who provided laborers for a business or industry, usually, as in the case of Skliris, for a fee paid by each worker.
48. Ibid., 296.
49. Ibid.
51. Bailey, Old Reliable, 103.
52. Ibid.
53. Ibid., 104.
56. Ibid.
58. Ibid., 103.
60. Bailey, Old Reliable, 103.
61. “Outline of History of Bingham Canyon and Kennecott Utah Copper,” 2, Kennecott Copper Corporation Archives.
63. Spendlove, “History of Bingham Canyon,” 64.
65. Arrington and Hansen, Richest Hole on Earth, 68.
66. Ibid.
67. Telluride Power Company document, Kennecott Copper Corporation Archives.
68. Bailey, Old Reliable, 83.
69. Ibid., 172.
70. Ibid., 154–57
72. Ibid., 154–55.
73. Ibid., 149–53.
74. Helen Z. Papanikolas, “Georgia Lathouris Mageras: Magerou, the Greek Midwife,” Utah Historical Quarterly: (Fall 1965); reprinted in Colleen Whitley, ed., Worth Their Salt, Too: More Notable but Often Unnoted Women of Utah, 159–70.
76. Floralee Millsaps, “Ada Duhigg: Angel of Bingham Canyon,” in Worth Their Salt, Too, 156.
77. Ibid., 159.
78. Parsons, Porphyry Coppers, 80, quoted in Arrington and Hansen, Richest Hole on Earth, 70.
79. Arrington and Hansen, Richest Hole on Earth, 70.
84. Bailey, Old Reliable, 164.
86. Ibid., 14.
89. Arrington and Hansen, Richest Hole on Earth, 77.
90. Ibid.
91. Bailey, Old Reliable, 172.
92. Rosie the Riveter was a popular icon of women working in men’s jobs. She appeared on posters, in newspapers, and eventually on T-shirts.
95. Jackling received still other honors. On 19 April 1955, Brigadier General Maxwell E. Rich, the Utah adjutant general, by Special Order promoted Colonel Jackling to the honorary rank of brigadier general in the Utah National Guard: “In recognition of outstanding and meritorious service rendered the Utah National Guard, the State of Utah, and the United States of America during a long and distinguished career which has included two World Wars, and in appreciation of technological and managerial contributions of important significance to the State of Utah.” State of Utah, Military Department, Office of the Adjutant General, Special Orders 11, 19 April 1955.
98. J. P. O’Keefe, general manager, Utah Copper Division, in Kennescope (March–April 1963), 2, Kennecott Copper Corporation Archives.
100. Bailey, Old Reliable, 176–79.
102. Ibid., 34.
103. Ibid.
104. Louis J. Cononelos and Philip F. Notarianni, “Kennecott Corporation,” 2, Kennecott Copper Corporation Internal Archives.
11—Silver Reef and Southwestern Utah’s Shifting Frontier
W. Paul Reeve

1. Salt Lake Tribune, “Southern Utah” 18 August, “Southern Utah” 19 December 1875; “Bonanza City” 13 February, “Bonanza City” 5 April 1876. For other reports from the region during the same time period, see ibid., “Bonanza City” 24 March, “Harriseburg Disaster” 25 March; “Harriseburg Disaster” 1 April, “Southern Utah” 2 May 1876.

2. Pioche Daily Record (Pioche, Nevada), 17 April 1873. For a more detailed account of these events and a broader context for mining activity in southwestern Utah and southeastern Nevada, see W. Paul Reeve, “Mormons, Miners, and Southern Paiutes: Making Space on the Nineteenth-Century Western Frontier,” chapters 1–3.


4. The version of the initial discovery here is gleaned from a report written by Captain Hempstead and published in the “Editorial Notes—Discovery, Location etc., of the Panacka Lead,” Daily Union Vedette (Salt Lake City), 2 July 1864. Hempstead was at the claims in 1864 and likely learned the information in his report firsthand. In any case his is the most detailed and a chronologically close retelling of the first location by Hamblin with Moroni as guide. There is, however, another version of the discovery in a letter from Edward Bunker, LDS bishop at Santa Clara, to Brigham Young (20 January 1864, Brigham Young Collection, office files, 1832–78, microfilm, reel 40, box 29, folder 17). According to Bunker, the Paiutes had been trying to persuade Hamblin “to go with them to a lead mine as they said the Mormons wanted lead. Last fall he [Hamblin] consented to go with them. He found the mine situated about 12 miles from Meadow Valley lying about northwest from here and about 120 miles distant. He brought [sic] some of the ore home with him.” Bunker also mentions Hamblin giving a gun to a Paiute, not as inducement to show him the place but as incentive to keep the spot secret, especially from a group of California prospectors then searching for wealth in the area.

It is difficult to know which version is more accurate. I have relied upon Hempstead’s account because it seems more plausible that Hamblin would be twisting Moroni’s arm to show him the ore, rather than the other way around. Given Hamblin’s two-year search for gold in California, it is difficult to imagine him resisting Indian enticements to find wealth nearby. Bunker’s telling is perhaps tailored to Brigham Young as audience because it makes Hamblin a reluctant participant instead of an active prospector, much more in line with Young’s general policy against mining. See also the testimony of William Pulsipher in the Raymond and Ely vs. Hermes mining case and Judge Pitzer’s closing argument as a lawyer for the Hermes Company in that case, Pioche Daily Record, 29 March; 12, 24 April 1873.

7. Ibid.
8. For more on Connor, see Brigham D. Madsen, *Glory Hunter: A Biography of Patrick Edward Connor* and chapter three of this volume.
9. See Reeve, “Mormons, Miners, and Southern Paiutes,” 30–54, for a more detailed account of these events.
10. Bonelli to Smith, 30 April 1864; Panaca Ward, Uvada Stake, manuscript history and historical reports, microfilm, LR 6708, series 2.
14. Erastus Snow to Brigham Young, 19 June 1864, Brigham Young Collection, office files, 1832–78, microfilm, reel 55, box 42, folder 18.
17. *Pioche Daily Record*, “The Great Mining Suit,” 28, 30 March; 1 April 1873; Panaca Ward manuscript history.
21. *Daily Union Vedette*, 18 November 1865. Sale resigned his post as recorder in October 1865. *Annual Report of the State Mineralogist* notes that the number of mining locations on record for Pahranagat “probably reaches one thousand” (64).
27. The house debate over the bill is contained in *Congressional Globe*, part 3, 2368–70. To trace the bill (Senate Bill 155) through the Senate and House, see *Congressional Globe*, part 1, 645; part 2, 1386, 1401, 1535; part 3, 2358, 2377, 2381. The bill also added a portion of northwestern Arizona Territory to Nevada, which was ratified by the Nevada Legislature in 1867. See Donald Bufkin, “The Lost County of Pah-Ute,” *Arizoniana: The Journal of Arizona History*; 7; and John M. Townley, *Conquered Provinces: Nevada Moves Southeast, 1864–1871*.
Notes

34. Mark A. Pendleton, “Memories of Silver Reef,” Utah Historical Quarterly: 99–118; Proctor and Shirts, Silver, Sinners and Saints, 26. See also chapter four of this book for the full story.
38. “Southern Utah,” Salt Lake Tribune, 2 May 1876.
42. Stucki, “Historical Study of Silver Reef,” 18; Proctor and Shirts, Silver, Sinners and Saints, 35–36; Ferris recounted his involvement at Silver Reef in a letter to the editor of Mines and Methods, April 1920. The quote here is from that letter, as reprinted in Proctor and Shirts, Silver, Sinners and Saints, 35–36.
43. Stucki, “Historical Study of Silver Reef,” 18; Proctor and Shirts, Silver, Sinners and Saints, 37.
47. Salt Lake Tribune, 19 December 1875; Stucki, “Historical Study of Silver Reef,” 20–21; Proctor and Shirts, Silver, Sinners and Saints, 38–41.
48. Salt Lake Tribune, 1 April 1876; Proctor and Shirts, Silver, Sinners and Saints, 39.
52. Stucki, “Historical Study of Silver Reef,” 25; Proctor and Shirts, Silver, Sinners and Saints, 41–43.
54. For reports of merchants and miners moving from Pioche to Silver Reef, see the Pioche Weekly Record, 19 May 1877; 6 April 1878; Proctor and Shirts, Silver, Sinners and Saints, 47–49; Stucki, “Historical Study of Silver Reef,” 31–39.
56. Pendleton, “Naming Silver Reef”; “Correspondence,” Pioche Weekly Record, 13 April 1878.
57. Proctor and Shirts, Silver, Sinners and Saints, chapter twelve.
59. Proctor and Shirts, Silver, Sinners and Saints, 171–75; Stucki, “Historical Study of Silver Reef,” 88–89.
60. Proctor and Shirts, Silver, Sinners and Saints, 47, 49, 175–81; Stucki, “Historical Study of Silver Reef,” 117–18.
From the Ground Up

63. Proctor and Shirts, Silver, Sinners and Saints, 188–91.
64. Stucki, “Historical Study of Silver Reef,” 37; the Wells Fargo building has been restored and currently serves as a museum and art gallery; see Proctor and Shirts, Silver, Sinners and Saints, 202.
70. Reeve, “In 1879 a Mormon Choir Sang for a Catholic Mass in St. George.”
71. Ibid.
75. See Reeve, “Mormons, Miners, and Southern Paiutes,” 162–66, for examples of Young’s speeches aimed at Pioche.
76. Church of Jesus Christ of Latter-day Saints, Journal of Discourses, 1 January 1877, 18:305. For additional evidence of Young’s anti-mining stance, especially as it applied to southern Utah Saints, see Reeve, “Mormons, Miners, and Southern Paiutes,” 150–79.
80. Ibid.
84. Ibid. See also the following articles from the Salt Lake Tribune: “The Silver Reef Trouble” and “Silver Reef,” 4 February 1881; “Silver Reef Matters,” 9 February 1881; “Silver Reef Strike,” 8 February 1881; “The Silver Reef Row,” 10 March 1881; and “Silver Reef Affairs,” 19 March 1881.
85. Pioche Weekly Record, 5 March 1881; Stucki, “Historical Study of Silver Reef,” 96; Proctor and Shirts, Silver, Sinners and Saints, 153.
86. Pioche Weekly Record, 12 February 1881.
87. Ibid., 5 March 1881; see also Proctor and Shirts, Silver, Sinners and Saints, 152–53.
91. Stucki, “Historical Study of Silver Reef,” 96–97; Proctor and Shirts, Silver, Sinners and Saints, 153–54; Pendleton, “Memories of Silver Reef.”

1. This work began when Laurence P. James interviewed many old mining people about their work in the Cottonwood-American Fork area. Their gift of time to answer innumerable questions about the Wasatch region was priceless. So, too, was the opportunity to work with Charles Keller of Salt Lake City, Utah, and Richard Winslow of the Public Library in Portsmouth, New Hampshire; their help is especially appreciated. Both authors wish to thank the many enthusiastic historians and chroniclers who have provided their time and data. Finally, both authors wish to thank Corwin Grueble of the University of Colorado, Denver, for his computer expertise.
3. F. C. Calkins and B. S. Butler, Geology and Ore Deposits of the Cottonwood and American Fork Area, Utah, 72; Laurence P. James, Geology, Ore Deposits, and History of the Big Cottonwood Mining District, Salt Lake County, Utah, 31.
From the Ground Up

19. U.S. Congress, Emma Mine Investigation; Spence, 144–82.
20. Keller, Lady in the Ore Bucket, 146.
25. Keller, Lady in the Ore Bucket, 179.
34. J. Cecil Alter, Early Utah Journalism; Salt Lake Mining Review, 30 November 1903, p. 13 ff.
35. Richard Knight to Laurence P. James, various letters in 1976 and 1977, James papers; Jesse William Knight, Jesse Knight Family.
36. James, Geology, Ore Deposits, and History of Big Cottonwood; Keller, 214–17.
37. B. S. Butler, G. F. Loughlin, V. C. Heikes et al., The Ore Deposits of Utah; Calkins and Butler, Geology and Ore Deposits, 75–85.
Notes

39. A. B. Thomas to Laurence P. James, 1966; Cesar Ibanyez to James, interview in James papers.
40. R. F. Marvin to Laurence P. James, 1996, letters in James papers; Western Mineral Survey (Salt Lake City), 1926–1932.
41. Keller, Lady in the Ore Bucket; R. F. Marvin to Laurence P. James, 1967, letters in James papers.
42. E. H. Newman to Laurence P. James, 1984; S. Sargis to James, 1973, interviews in James papers.
43. See W. T. Parry, chapter one of this volume; Laurence P. James, “Big and Little Cottonwood (Alta) Mining Districts, Salt Lake County,” in Robert W. Gloyn, ed. The Mining Camps of Utah, forthcoming.
44. Marvin to James, 1969 letters; J. W. Wade to Laurence P. James, 1963; J. J. Beeson to Laurence P. James, 1974, interviews in James papers.
46. J. I. Kasteler to Laurence P. James, 1976, interviews in James papers.

13 — Park City

Hal Compton and David Hampshire

4. John M. Bourwell, Geology and Ore Deposits of the Park City District, Utah, 19.
5. Kate B. Carter, Our Pioneer Heritage, 7:117. For more on Connor’s involvement with Utah mining, see chapter three of this work and Brigham D. Madsen, Glory Hunter: A Biography of Patrick Edward Connor.
6. Bourwell, Geology and Ore Deposits of Park City, 19.
9. Park Record, 6 February 1931.
12. Ibid., 11.
15. Park Record, 7 January 1905.
16. Park Record, 16 March 1917.
17. Park Record, 13 January 1938.
18. Bourwell, Geology and Ore Deposits of Park City, 136.
22. O. N. Malmquist, The First 100 Years, 181.
From the Ground Up

24. Thompson and Buck, Treasure Mountain Home, 35.
25. Boutwell, Geology and Ore Deposits of Park City, 145.
26. Park Record, 28 October 1927.
27. Margaret D. Lester, Brigham Street, 104.
29. Thompson and Buck, Treasure Mountain Home, 12.
31. Park Record, 28 July 1894, 13 August 1904.
32. Thompson and Buck, Treasure Mountain Home, 49–52.
33. Judy Dykman and Colleen Whitley, The Silver Queen, 8.
34. Salt Lake Mining Review, 30 November 1913.
37. Salt Lake Tribune, 20 June 1898.
39. Ibid., 39–40.
40. Ibid., 64.
41. Park Record, 6 June 1908, 17 February 1911, 24 March 1933; Cheryl Livingston, “Mother Rachel Urban, Park City’s Leading Madam,” in Worth Their Salt: Notable but Often Unnoted Women of Utah, ed. Colleen Whitley, 122–29. Livingston contends that the brothels were located on Main Street until 1907. However, there are references in the Park Record to “fast houses” in Deer Valley as early as 1884.
42. Glenwood Cemetery, National Register of Historic Places Registration Form, Julie Osborne and Hal Compton, May 1996, Utah State Historic Preservation Office.
44. Ibid., 173.
45. Park Record, 1 October 1904.
46. Salt Lake Mining Review, 30 January 1915; Thompson and Buck, Treasure Mountain Home, 91–92. In spite of their similar names and proximity to one another, the Silver King (which became the Silver King Coalition) and the Silver King Consolidated (King Con) mines were, at this time, separate entities with different owners.
47. Thompson and Buck, Treasure Mountain Home, 57.
49. Park Record, 29 October; 5, 12 November 1915.
51. Salt Lake Tribune, 7 May 1919.
52. Park Record, 9 May 1919.
55. Mike Ivers papers, MS 370, folders 2, 7, and 8. This collection includes a series of reports to the Silver King Coalition Mining Company, written between 27 May and 6 August 1919, which carefully document the movements of the strikers. The reporter, someone identified only as “Opr. #240,” clearly had the confidence of the strike organizers.
56. Salt Lake Tribune, 22 June 1919.
57. Park Record, 18 July 1919.
Notes

58. Park Record, 7 July 1916; Salt Lake Mining Review, 30 October 1916, 15 January 1917.
60. Park Record, 15 June 1917; Salt Lake Mining Review, 15 August 1917.
64. Salt Lake Mining Review, 30 March 1922, p. 17.
65. Salt Lake Mining Review, 30 October, 30 December 1922.
67. Salt Lake Mining Review, 30 December 1923, p. 17.
69. Park Record, 24 August 1928, 29 March 1929, 22 August 1930.
70. Park Record, 31 January, 4 April 1930.
71. Park Record, 20 February 1931, 1 May 1931, 19 February 1932.
72. Park Record, 6 March, 1 May, 5 June 1931; 18 March 1932, 30 December 1932, 24 February 1933.
73. James Ivers, interview with David Hampshire, 13 September 1997, transcript in possession of the author. Ivers held several positions at the Silver King during the 1930s and 1940s, including chief engineer. He moved to northern Michigan in 1950 but returned to Park City in January 1965 as president of United Park City Mines. Ivers was the third generation of a Park City family to play an important role in the Silver King. His grandfather, also named James Ivers, had been a partner of Keith and Kearns in the Silver King. His father, with the same name, was the general manager of the Silver King Coalition from 1935 to 1952 and president from 1952 to 1953.
75. Park Record, 22, 29 December 1933; 5 January, 9 February, 24 August 1934.
76. Park Record, 12 October 1934; 8 February 1935, p. 1.
77. Park Record, letter to the editor, 3 May 1935, p. 1.
78. Park Record, 12 July 1935, p. 1.
79. Park Record, 8 February 1935, 4 March 1943, 24 February 1949.
80. Park Record, 13 March 1936, p. 1.
82. Deseret News, 3, 9, 11 December 1936.
83. Salt Lake Tribune, 13 December 1936, p. 1 and p. 10A.
84. Park Record, 17 December 1936.
85. James Ivers interview.
86. Park Record, 31 March 1938.
87. Park Record, 28 April, 5 May 1938.
88. Park Record, 6 June, p. 1, 12 December 1940; 14 August 1941.
89. Park Record, 4 March, p. 1, 16 September 1943; 8 February 1945.
90. Park Record, 26 December 1946, 18 March 1948.
91. Park Record, 29 April, 24 June 24, 22 July 1948; 28 April 1949.
93. Salt Lake Tribune, 10 September 1949; Park Record, 7 September 1950.
94. Summit County Bee, 22 January 1953, p. 5.
96. Summit County Commission minutes, 8 March 1954, pp. 388–89.
97. Summit County Bee, 6 September 1956.
98. Salt Lake Tribune, 31 August, 18 September 1962; 8, 22 December 1963, p. 1B.
99. Summit County Bee, 7 December 1961; 5 April 1962.
From the Ground Up

Philip F. Notarianni

11. James Ivers interview.
15. Salt Lake Tribune, 21 August 1979, 16 April 1982; Park Record, 28 May 1981, p. 4A.

14—Tintic Mining District

2. Eureka Reporter, 15 February 1918, 1.
10. Ibid.
11. Ibid. An excellent source of mining terminology appears in Albert K. Fay, A Glossary of the Mining and Mineral Industry. Also see the glossary in this volume.
13. Heikes, “History of Mining and Metallurgy,” 105. This site at Ironton apparently was south and west of the present Tintic Junction, just west of Eureka.
14. Reeder, “History of Utah’s Railroads,” 360–63. It is interesting to note that Jay Gould, the eastern financier with interests in Carbon County, had stock in the Utah Southern Railroad extension. The Utah Southern and Utah Southern extension consolidated under the Union Pacific as part of the Utah Central Railway in July 1881.
18. Ibid.
19. Ibid., 115.
20. Ibid., 115–16; Salt Lake Tribune, 1 January 1880, 7.
22. Western Mining Gazetteer, 8 January 1881, 2.
Notes

25. Salt Lake Tribune, 1 January 1887, 6.
27. Salt Lake Tribune, 1 January 1890, 6. The report also noted that wood was fast disappearing and coal would be the new fuel. Mines in Carbon County would eventually figure in supplying that coal.
28. Ibid.
29. Salt Lake Tribune, 1 January 1891, 2.
30. Salt Lake Tribune, 1 January 1892, 24.
31. Ibid.
32. Salt Lake Tribune, 1 January 1893, 27.
33. Western Mining Gazetteer, 8 January 1881, 2.
34. Salt Lake Mining Review, 30 May 1899, 7; 30 December 1899, 6; 30 August 1900, 10; 15 October 1900, 9; and 15 May 1909, 22 (article entitled, “The Railroads and Smelters”).
35. Ibid.
36. See the following: Salt Lake Tribune, 1 January 1897, 2; 1 January 1898, 17; Gary F. Reese, “Uncle Jesse: The Story of Jesse Knight”; J. William Knight The Jesse Knight Family: Jesse Knight, His Forebears and Family; Kay Harris, The Towns of Tintic, 157–67; Alice P. McCune, History of Juab County, 229–31, 237–41; Salt Lake Mining Review, 15 June 1909, 17; Knight Investment Company, Papers, MS 278.
37. See Eureka Reporter, 9 July 1909, 1; 11 October 1912, 1; and “The Beginning of Tintic Mining District,” unpublished manuscript.
40. Craig Fuller, interview with the author, Salt Lake City, Utah, 26 March 1980. For a complete discussion of this influx, see Philip Taylor, The Distant Magnet: European Emigration to the U.S.A.; Sanborn maps, Eureka, 1898, 1908; and A. William Hoglund, “No Land for Finns: Critics and Reformers View the Rural Exodus from Finland to America between the 1880s and World War I,” in The Finnish Experience in the Western Great Lakes Region: New Perspectives, ed. Michael G. Kami, Matti E. Kaups, Douglas J. Ollila, Jr., 36–54; Utah Gazetteer, 1892–93.
42. Eureka Reporter, 30 January 1903, 8.
43. Eureka Reporter, 11 October 1912, 1.
44. Article reprinted in the Eureka Reporter, 28 June 1912, 8.
45. Reverend Louis J. Fries, One Hundred and Fifty Years of Catholicity in Utah, 95–97.
47. Henry Martin Merkel, History of Methodism in Utah, 151–53.
48. Tintic Miner (Eureka, Utah), 1 November 1895 (unpaginated).
50. In 1886 the miners had formed a local union and affiliated with the Knights of Labor. See Johnathan Ezra Garlock, “A Structural Analysis of the Knights of Labor: A Prolegomenon to the History of the Producing Classes,” 411.
51. Salt Lake Tribune, 22 February 1893, 5.
52. Salt Lake Tribune, 7 March 1893, 5; 8 March 1893, 7.
53. Salt Lake Tribune, 28 February 1893, 7; Lingenfelter, Hardrock Miners, 217.
54. Salt Lake Tribune, 8 March 1893, 7.
From the Ground Up

55. *Salt Lake Tribune*, 11 March 1893, 5; 8 March 1893, 5.
56. *Salt Lake Tribune*, 14 March 1893, 5; 15 March 1893, 8; 16 March 1893, 8; Eureka City Criminal Justice Docket Ledger, 1893, Tintic Mining Museum, Eureka, Utah.
57. *Salt Lake Tribune*, 30 March 1893, 5; 4 April 1893, 5; and 5 April 1893, 6.
64. *Deseret News*, 15 March 1893, 3; *Salt Lake Tribune*, 17 March 1893, 5; 1 April 1893, 5; 2 April 1893, 5; 3 April 1893, 5; and 6 June 1893, 8.
65. *Salt Lake Tribune*, 11 June 1893, 3; 14 June 1893, 3; and 30 June 1893, 8.
67. In the *Salt Lake Tribune*, 14 June 1893, 3, Eureka union men charged that the Beck people had blown up the houses and blamed the union to create a public outcry. The outcry did not materialize.
70. For more information on labor relations in the mining industry generally, see Vernon H. Jensen, *Heritage of Conflict: Labor Relations in the Non-ferrous Metals Industry Up to 1930*.
73. *Salt Lake Tribune*, 1 January 1899, 17.
74. *Salt Lake Tribune*, 1 January 1895, 26–27.
75. *Salt Lake Tribune*, 1 January 1896, 21; 1 January 1897, 20; 1 January 1898, 17.
76. *Salt Lake Mining Review*, 15 September 1899, 5.
77. Heikes, “History of Mining and Metallurgy,” 108; Don Maguire, Utah’s Great Mining Districts, 121.
78. Maguire, Utah’s Great Mining Districts, 22.
80. Eureka City Minute Book, Book 1, 1; Eureka City Criminal Justice Docket Ledger, 1893. In one incident, the mayor, Hugo Deprezin, was arrested in a house of prostitution and, when questioned about his presence there, remarked that he had been to the dentist and received a shot of Novocain, and hence had no knowledge of his actions.
82. *Eureka Reporter*, 5 December 1902, 8; 14 May 1909, 12; 6 March 1903, 1; 20 November 1903, 8; 20 March 1903, 8.
83. *Eureka Reporter*, 13 March 1903, 1, 8; 13 November 1903, 8; 19 February 1904, 5; 16 January 1903, 8.
86. Chief Consolidated Mining Company Meeting Minutes, vol. 1, 16 February 1909–December 1922; *Salt Lake Mining Review*, 15 March 1909, 30; *Eureka Reporter*, 19 March 1909, 8; 30 July 1909, 1; 28 January 1910, 1; Abstracts of Title, Eureka, Utah, Juab County.
88. See the production table in Federal Emergency Relief Administration, *The Significance to the Rural Relief Problem of Economic Fluctuations in the Tintic Metal Mining Region in Utah*, 50.
89. Raymond D. Steele, *Goshen Valley History*, 208–11.
Notes

92.  *Eureka Reporter*, 11 October 1918, 1; 18 October 1918, 1; 25 October 1918, 1; 1 November 1918, 1; Jack Lucas, interview with the author, Eureka, Utah, 15 August 1976.
100.  Ibid., 232.
101.  Ibid., 237.

15—San Francisco Mining District
Martha S. Bradley

3. For more on Brigham Young’s recommendations about mining and the earliest mining explorations in the state, see chapter three of this volume.
5. Joe Smith, interview with Rosemary Davies, 7 October 1974, Milford, Utah, copy available at the Utah State Historical Society, Salt Lake City.
11. Frank Robertson, quoted in the *Deseret News*, 8 September 1969. Robertson, along with Beth Kay Harris, authored *Boom Towns of the Great Basin*.
15. *Utah Mining Gazette*, 25 July 1874, 381.
17. *Salt Lake Tribune*, 1 July 1877.
19. Ibid.
From the Ground Up

23. Richfield Reaper, 30 April 1937.
34. “New Prospect Being Developed by Horn Silver,” Beaver Press, 4 September 1931.
40. “Gold Mine Sells for $250,000,” Beaver Press, 5 April 1935.
41. “Important Mining Deal Consummated in Beaver,” Beaver Press, 10 April 1936.
42. “Car of Ore to Be Shipped from the Sheep Rock Mine,” Beaver Press, 9 October 1936.
43. “Star District Mining Activities,” Beaver Press, 5 April 1935.
46. Ibid.
52. “Horn Silver Hits Heavy Production,” Beaver Press, 7 March 1940.
53. Ibid.
54. “Scheelite Adds Millions to Value of Old Hickory Mine; Mill Will Be Installed,” Beaver Press, 5 December 1940.
56. “Work Resumed on Tungsten Claims in West Mountains,” Beaver Press, 6 August 1942.
58. “Startling Discovery Made in Old Forgotten Mine Tunnel,” Beaver Press, 4 June 1943.
Notes

71. According to the executive summary produced to secure the original loan to purchase the rights, “The Company’s properties include about 3,794 acres of patented mining claims either owned, under contract to be acquired, or leased, plus unpatented mining claims, State of Utah mineral leases, and 133.45 acres of fee lands in and near Milford. The total property holdings controlled or under contract aggregate about 40,532 gross acres, including substantial overlap of certain properties. The approximate total of net mineral acres controlled or under contract by the Company is about 37,700 net acres.” “Executive Summary,” Mining, 0396 WUC Copper Mine, Utah, $8-Loan, http://www.help-finance.com/download/0396-Eng.doc

16—Uinta Basin
John Barton

1. Many Utahns are unaware that nearly half of the Uinta Basin is in Colorado. Since the eastern rim is formed by the Rocky Mountains, Steamboat Springs, Meeker, and surrounding areas are part of the Uinta Basin. There are two accepted spellings for Uinta. “Uinta” is generally used for natural features such as the Uinta Basin or the Uinta Mountains, whereas “Uintah” is used for human institutions such as Uintah County and the Uintah Utes. Though not known to all basin residents or consistently used, this distinction explains the difference in spelling.

2. The Uintas have several peaks over 12,000 feet, and King’s Peak is the highest in the state at 13,528 feet above sea level. King’s Peak was named after Clarence King, early director of the U.S. Geological Survey. See John W. Vancott, Utah Place Names, 214.


4. For more information on Spanish mining and Indian folktales on the subject, see Gale R. Rhoades and Kerry Ross Boren, Footprints in the Wilderness: A History of the Lost Rhodes Mines; see also Gale R. Rhoades, The Lost Gold of the Uintah’s: The Rest of the Story. Neither of these books is considered a credible source by most historians; however, they contain the most complete details of the many stories and folktales about the lost Rhodes Mines and other gold finds in the Uinta Mountains. See also chapter four of this book.


6. At the start of the atomic era after World War II, uranium exploration peaked. Between 1949 and 1958, 161 tons of uranium ore was produced from several mines. The total yield was 648 pounds of U3O8 at .20 percent and 395 pounds of V2O5 at 0.16 percent. Uranium mining in the Uinta Basin was too limited in quantity and quality to continue, however. See Thomas D. Fouch et al., eds., Hydrocarbon and Mineral Resources of the Uinta Basin, Utah and Colorado.

7. See the “The Dredge Christened,” Vernal Express, 23 October 1908.
9. Ibid. See also Burton, History of Uintah County, 135.
10. Burton, History of Uintah County, 89–90. The Silver King Mine in the Uinta Basin should not be confused with the more famous and profitable mine in Park City.
11. Ibid., 90.
12. Ibid., 139.
From the Ground Up

15. Burton, History of Uintah County, 140.
17. By 1978 the Altramont/Bluebell field was producing 33,607 barrels of oil daily, which amounts to 39 percent of the oil output from the state; see Wayne L. Walquist, ed., Atlas of Utah, 211. This percentage dropped as drilling in the 1980s extended to additional new oil fields in Utah.
18. Utah is not usually thought of as an oil state, and the Uinta Basin is the exception. Additional limited drilling has occurred in several other counties, including San Juan, Emery, and Carbon.
20. Ibid. The 42 percent figure is an average. The percentages change somewhat from region to region throughout the state's oil-producing areas from year to year.
22. Vernal Express, 28 September 1994. Local production did drop significantly with the oil glut. In 1984, 37,902,000 barrels of oil were produced in the state, and in 1988, the output was 33,017,000 barrels. However, the value of that oil was significantly different. The 1984 oil was valued at $1,031,313,000, while 1988 production, although only 4.88 million barrels different, was worth only $470,492,000—less than half due to the decline in oil prices per barrel.
23. Vernal Express, 28 September 1994. Drilling costs are higher in Utah than any other onshore state except Alaska and Louisiana.
24. Ibid.
31. “Coal Mining in Ashley Valley,” Vernal Express, 13 December 1928.
32. Carl Gardner, interview with the author, Vernal, Utah, 19 August 2002. Carl Gardner at the time of the interview had just turned 100 but could remember his experiences during the Depression well.
33. Geologists refer to gilsonite as asphaltite; another less-used name is uintaite.
34. Pruitt, Mineral Resources of Uintah County, 7.
38. Charles William Smith, From Then until Now, 796.
39. Daily Sentinel, 18 January 1905; see also Burton, History of Uintah County, 93.
41. Pruitt, Mineral Resources of Uintah County, 47.
Notes

44. For commercial mining of gilsonite, a vein must be at least five feet wide. Of the estimated 30 million tons of total gilsonite in Utah, much of it is in veins too small to justify mining.