NOTES TO VOLUME 1: EXPANSION

The following notes are intended as a companion and additional resource to The Yankee Road, Volume 1. As you read Volume 1, you will find references to these notes throughout the text. If you have a copy of the first edition of Volume 1 (2015), you will find these notes included in the book itself. To offer the reader the book at an even better price point, the notes were moved to an online resource in the revised (2018) edition. Should you have additional questions or have feedback, you are invited to contact the author at j.mcniven@theyankeeroad.com.

Introduction

1. Diogenes Laërtius, who lived in the third century AD, about 600 years after Xenophon, included a short sketch of him in his *Lives of Eminent Philosophers*, Book 2, trans. R.D. Hicks (Cambridge MA: Harvard University Press, 1925), chap. 6, n59.
2. Douglas Brinkley, *The Majic Bus: An American Odyssey* (San Diego: Harcourt Brace and Company, 1993), 12
3. Matthew Algeo, *Harry Truman's Excellent Adventure: The True Story of a Great American Road Trip* (Chicago: Chicago Review Press, 2009), 1.
4. Jack Kerouac, *On The Road* (1957; New York: Penguin, 1991), part 2, chap 3.
5. Words by Robert Hunter, first performed August 18, 1970.
6. Many books and articles have been written about this campaign. A useful, recent account is Robin Waterfield, *Xenophon's Retreat* (London: Faber and Faber, 2006).
7. Another Lowell diner, which held out until 1991, was Arthur's "Paradise," which Kerouac often visited and from which, it appears, he took his *On the Road* pseudonym "Sal Paradise"; John J. Dorfner, *Kerouac: Visions of Lowell* (Raleigh, NC: Cooper Street Publications, 1993), 52. Nearby Worcester is said to be the home of the first diner.
8. The title of the book was a takeoff on Neal Cassady's phrase for being high: "going on the road."
9. Steve Turner, *Angelheaded Hipster: A Life of Jack Kerouac* (New York: Viking, 1996), 17.
10. Ibid., 209. I felt this myself there.
11. Ibid., 23.
12. Brinkley, *Majic Bus*, 26.
13. Turner, *Angelheaded Hipster*, 101.
14. When Kerouac died, most of his books were out of print and his assets totaled $91; Turner, *Angelheaded Hipster*, 211.
15. Kerouac, *On The Road*.
16. In 1948, Kerouac described his project to a friend as "American picaresque"; John Leland, *Why Kerouac Matters: The Lessons of On the Road (They're not What You Think)* (New York: Viking, 2007), 3.
17. Turner, *Angelheaded Hipster*, 17
18. Leland, *Why Kerouac Matters*, 5.
19. Turner, *Angelheaded Hipster*, 20–1.
20. Leland, *Why Kerouac Matters*, 8.
21. Kerouac saw hoboes as lost pioneers who represented the American drive to the frontier. But, by the 1930s, there was no frontier; Turner, *Angelheaded Hipster*, 214.
22. Ibid., 18.
23. Robert M. Pirsig, *Zen and the Art of Motorcycle Maintenance* (New York: Bantam, 1974).
24. Walden went along on the trip. See W. Barksdale Maynard, *Walden Pond: A History* (New York: Oxford University Press USA, 2004,2005) 286.

25. The mystique of motorcycling is described in Paul McHugh, 'The Pure Jones of It', in James O'Reilly, Sean O'Reilly, Tim O'Reilly, eds.*The Road Within: True Stories of Transformation and the Soul (Travelers' Tales Guides)* (San Francisco: Travelers Tales, 2002), 94-6.
26. See, for instance, Mark Richardson, *Zen and Now: On the Trail of Robert Pirsig and the Art of Motorcycle Maintenance* (New York: Alfred A. Knopf, 2008).
27. William Least Heat-Moon, *Blue Highways: A Journey into America* (Boston: Little, Brown, 1982), introduction.
28. Kris Lackey, *Road Frames: The American Highway Narrative* (Lincoln: University of Nebraska Press, 1997), 53.
29. Phil Patton, *Open Road: A Celebration of the American Highway* (New York: Simon and Schuster, 1986), 241–2.
30. Lackey, *Road Frames*, 87.
31. Brinkley, *Majic Bus*, 19.
32. Ibid., 15.
33. The first was published in Connecticut in 1935; the federal government liked the idea and spread it nationally — see Nick Taylor, *American-Made: The Enduring Legacy of the WPA: When FDR Put the Nation to Work* (New York: Bantam, 2009) p.292
34. See John Gunther, *Inside U.S.A.* (New York: Harper & Brothers, 1947); Jamie Jensen, *Road Trip USA* (Berkeley, CA: Avalon Travel Publishing, annual).
35. John Steinbeck, *Travels With Charley: in Search of America* (New York: Viking: 1962), 121–2.
36. Tang, developed as an artificial orange juice crystal for the US manned space program, led to a variety of artificial foods. The Internet grew out of an attempt by the US federal Defense Advanced Research Projects Agency to improve communication among researchers.
37. Science and science-fiction writer Isaac Asimov, who had some negative involvement with a presidential Strategic Defense Initiative advisory committee, commented, perhaps accurately, "Star Wars? It's just a device to make the Russians go broke"; David G. Hartwell and Kathryn Cramer, *The Hard SF Renaissance* (New York: Tor, 2002), 919.
38. An exception is Edmund Morgan, *The Puritan Family: Religion and Domestic Relations in Seventeenth Century New England* (New York: Harper Torchbook, 1944, rev. ed. 1966), chap. 6, entitled "Puritan Tribalism." I suspect that the desire to see the melting pot everywhere and everywhen might have obscured the influence of Native American customs, especially on early colonial life.
39. See Joseph A. Conforti, *Imagining New England: Explanations of Regional Identity from the Pilgrims to the Mid-Twentieth Century* (Chapel Hill: University of North Carolina Press, 2001), introduction.
40. The term "Yankee" seems to have entered popular American parlance in the 1820s, with the publication of Washington Irving's *Rip Van Winkle* and *The Legend of Sleepy Hollow* and the novels and stories of Harriet Beecher Stowe. As well, Lydia Maria Child's *The American Frugal Housewife*, which went through thirteen editions between 1829 and 1842, contributed to the Yankee mystique. See ibid., 150–60.
41. Historians often use "the United States" as shorthand to refer to the time before 1865 when there was greater personal identification with one's state and most policy areas

were dealt with at the state level; after the war, the federal government held undisputed primacy over the states in many areas of policy.

42. Susan E. Gray, *The Yankee West: Community Life on the Michigan Frontier* (Chapel Hill: University of North Carolina Press, 1996), 1.
43. Garry Wills, *Head and Heart: A History of Christianity in America* (New York: Penguin Books, 2007), 75.
44. Jim Webb, *Born Fighting: How the Scots-Irish Shaped America* (New York: Broadway Books, 2004).

Chapter 1

1. There are a number of somewhat or largely conflicting stories about the song. "Doodle" is apparently eighteenth-century German slang for a "fool" or "bumpkin," while "macaroni" was British slang referring to London dandies who imitated the latest Italian fashions. See also, Charles Panati, *The Extraordinary Origins Of Everyday Things* (New York: Harper Collins, 1987), 286-7
2. T.J. Stiles, *The First Tycoon: The Epic Life of Cornelius Vanderbilt* (New York: Alfred A. Knopf, 2009), 166.
3. Cait Murphy, *Crazy '08: How a Cast of Cranks, Rogues, Boneheads, and Magnates Created the Greatest Year in Baseball History* (New York: Smithsonian/Collins, 2007), 4.
4. From "Cape Cod," quoted in Stephen Mulloney, *Traces of Thoreau: A Cape Cod Journey* (Boston: Northeastern University Press, 1998), 123.
5. Gore Vidal notes that, "most comically, he [President Martin Van Buren] said, not 'Yankees,' but 'Jankes,' the Dutch word for a barking dog"; *Burr* (New York: Bantam Books, 1974), 546.
6. An alternative origin, only slightly less derogatory, is from the nickname "Janke," or "Little John":

a. "Johnnies" the Dutch called them — "Johnnies" or Jankins." All the lads and gentry of the Connecticut settlement carried the Johnnie label. They might be fishermen testing their lines on the Shrewsbury banks in Yorker waters, or trappers stalking the game runs east of Hartford; they might be coastal peddlers tying up at the jetties of New Amsterdam with deck cargoes of pelts and potashes, tobacco and turnips. Everywhere British paths crossed those of the Dutch, the same derisive sobriquet followed.
b. But the English "J" was difficult for Germanic tongues, and after a while the "Jankin" degenerated into "Yankee," and the neighbors in Manhattan had fixed for all time a title on the sons of Connecticut.
c. W. Storrs Lee, *The Yankees of Connecticut* (New York: Henry Holt, 1957), x,1.

7. Apparently, the first official use of the term was by General James Wolfe during the British expedition against Quebec, in mentioning the Yankee soldiers who accompanied it. A few years later, the British soldiers sent out to seize American arms thought to be located in Concord and Lexington, Massachusetts, sang the tune "Yankee Doodle Dandy" to mock the country bumpkins they found there. The song had been in derogatory use by British troops at least since the 1745 assault on the French Fort Louisbourg in Cape Breton, now part of Nova Scotia. See Connecticut State Library, "Yankee Doodle, the State Song of the State of Connecticut" (Hartford, 2004), available online at http://www.cslib.org/yankeedoodle.htm. See also Linda S. Watts, *The Encyclopedia of American Folklore* (New York: Facts on File, 2007), 425–6.
8. By 1920, 62 percent of New Englanders were either immigrants or had at least one parent who was, compared with 38 percent nationally; see Robert F. Dalzell, *Enterprising Elite: The Boston Associates and the World They Made* (Cambridge, MA: Harvard University Press, 1987), 173.
9. The Puritans were influenced by Protestant Dutch refugees from Spanish persecution who settled in the textile manufacturing towns of East Anglia. See D. Plooij, *The Pilgrim Fathers from a Dutch Point of View* (New York: New York University Press, 1932), 13–14.
10. Russell Shorto, *The Island at the Center of the World: The Epic Story of Dutch Manhattan and the Forgotten Colony That Shaped America* (New York: Doubleday, 2004),156
11. A Royal charter appears to have been issued as early as 1606, dividing colonization into two companies: the first, the London Company, with lands below the Potomac River; and the second, the Plymouth Company, with lands above Long Island. An attempt at a colony by the Plymouth Company failed in 1608, and the charter might have lain dormant thereafter. Colin Woodard, *The Lobster Coast: Rebels, Rusticators, and the Struggle for a Forgotten Frontier* (New York: Viking, 2004), 78. For an in interesting and readable account of the goings-on that led to the creation of the Plymouth colony and its commercial side, see Godfrey Hodgson, *A Great and Godly Adventure* (New York: Public Affairs, 2006).
12. The landing at Plymouth Rock has become a kind of regional creation myth. For 150 years, the Plymouth colony was largely downplayed. Then, in 1769, a group of wealthy Plymouth residents began to celebrate "Forefathers" Day." Eventually, having an ancestor who had sailed on the *Mayflower* became a status symbol. See Joseph A Conforti*, Imagining New England: Explanations of Regional Identity from the Pilgrims to the Mid-Twentieth Century* (Chapel Hill: University of North Carolina Press, 2001), 203–5; and idem, *Saints and Strangers: New England in British North America* (Baltimore: Johns Hopkins University Press, 2006), 38–40.
13. They had been invited to settle in Dutch North America before sailing, but decided they wanted to remain English rather than being assimilated; see Plooij, *Pilgrim Fathers*, 29, 53.
14. They sent for supplies from a couple of fishing outposts, on islands off the coast of what is now Maine, that had been established as long ago as 1607. By 1620 there were nine such ouposts, while illegal fishing settlements on Newfoundland, to the northeast, dated from as early as 1615. See Woodard, *Lobster Coast*,84–6, 92.

15. Larzer Ziff, *Puritanism in America: New Culture in a New World* (New York :Viking, 1973), 37–40.
16. As early as 1614, Captain John Smith, while working for the London Company, followed the coast north to Maine and suggested that fishermen and farmers might create a "new" England there (Woodard, *Lobster Coast*, 83); he subsequently published *A Description of New England in 1616*; see Conforti, *Imagining New England*, 14–16.
17. R.A. Billington, *Westward Expansion: A History of the American Frontier*, 4th ed. (New York: Macmillan, 1974), 70–1.
18. There was enough work in the colonies that the better-off emigrants were prepared to accept indentured servants who would be free to pursue their own fortunes after a period of years working for a master, in exchange for passage and sustenance; Ziff, *Puritanism in America*, 43.
19. Ibid., 49–50.
20. Apparently, a number of English "puritans" who left for New England found the local Puritans too puritanical and went on to New Amsterdam. The Dutch, who were apprehensive of a New England population that was 10 times their own, and expansive to boot, welcomed them, but with mixed feelings. Shorto, *Island* pp.158-9.
21. Conforti, *Saints and Strangers*, 82–6.
22. John Winthrop noted on the eve of his departure for Massachusetts Bay in 1629 that England could provide employment for but half its people. The economy remained weak from declining textile sales and poor harvests, a good impetus for this emigration. See Margaret Ellen Newall, "The Birth of New England in the Atlantic Economy: From Its Beginning to 1770," in *Engines of Enterprise: An Economic History of New England*, ed. Peter Temin (Cambridge, MA: Harvard University Press, 2000), 19.
23. The decline of emigration to New England led to an economic recession (Conforti, *Imagining New England*, 32).
24. This Biblical reference was made in a speech by the Puritan leader John Winthrop before departing England for Massachusetts in 1630. It has resonated through American political thought ever since. Winthrop's speech, in part, is quoted in Stephen Innes, *Creating the Commonwealth: The Economic Culture of Puritan New England* (New York: Norton, 1995), 14. See also Conforti, *Imagining New England*, 27–8.
25. For an analysis of this process in Connecticut, see Richard L. Bushman, *From Puritan to Yankee: Character and the Social Order in Connecticut, 1690–1765* (New York: W.W. Norton, 1967).
26. Conforti, *Imagining New England*, 18.
27. R. Nash, *Wilderness and the American Mind* (New Haven, CT: Yale University Press, 1967), 35, 37.
28. "Outlivers" would claim or purchase lands on the boundaries of towns, begin to develop them, and then ask to be part of the town's decision-making bodies. Their need for roads to be extended to them and for a second meetinghouse a few miles from the original added to overall costs and tax rates and prompted a clash between the outlivers and townspeople. See Bushman, *From Puritan to Yankee*, chap. 4.
29. Conforti (*Saints and Strangers*, 50) maps the dispersion of settlements over time.
30. By 1700, Connecticut towns were using land sales to generate funds to provide local sales. Nearly twice as many towns were created in the colony in the thirty years after 1690 as in the thirty years before. This was roughly comparable to population growth, but

leaves out the town-infilling process. A lot of new land came on the market before the old land was completely sold. See Bushman, *From Puritan to Yankee*, 77–9, 82.

31. See Richard Slotkin, *Regeneration through Violence: The Mythology of the American Frontier, 1600–1860* (New York: Harper Perennial, 1996), 189–90.
32. For a history of the colonial economies of New England and their evolution into the Yankee culture, see Innes, *Creating the Commonwealth*.
33. Quoted in ibid., 18.
34. Conforti, *Saints and Strangers*, 15.
35. Ibid., 73–9.
36. Paul Johnson, *A History of the American People* (London: Phoenix, 1997), 56.
37. Bushman, *From Puritan to Yankee*, chap. 7, 135.
38. Conforti, *Imagining New England*, 58, 68.
39. The colonies began to hire agents in London to represent their interests *vis-à-vis* their competitors in England, but realized they had no elected voice, as English merchants did; see ibid., 67.
40. Ibid., 58–61.
41. Bushman, *From Puritan to Yankee*, 20, 44–6.
42. See Lewis Leary, "Introduction," in Benjamin Franklin, *The Autobiography of Benjamin Franklin* (1817; New York: Simon and Schuster/Touchstone, 1962), v. Both Jedediah Morse, the father of Samuel Morse, and Timothy Dwight, president of Yale University, recorded the dimensions of a New England cultural identity around the end of the eighteenth century, but did not use the term "Yankee" in their writings; see Conforti, *Imagining New England*, 131.
43. Franklin, *Autobiography of Benjamin Franklin*, 16–32.
44. John Mack Faragher, *Rereading Frederick Jackson Turner: "The Significance of the Frontier in American History" and Other Essays* (New York: Henry Holt, 1994), 71.
45. Garry Wills, *Henry Adams and the Making of America* (New York: Houghton Mifflin Harcourt, 2005), 30–31.
46. James Fenimore Cooper, *The Pioneers* (1823), quoted in Hugh C. MacDougall, "James Fenimore Cooper: Pioneer of the Environmental Movement" (James Fenimore Cooper Society, 1999), available online at www.oneonta.edu/external/cooper/articles/informal/hugh-environment.html. See also Alexis de Tocqueville's reaction to settlers and trees in George Wilson Pierson, *Tocqueville in America* (Baltimore: John Hopkins University Press, 1996), 193.
47. When the Acadians were expelled from Nova Scotia in 1755, because they would not swear allegiance to the British Crown, their lands were sold off to New England farmers, called Planters locally. Haliburton's grandfather came from Massachusetts with the Planter emigration.
48. See Richard A. Davies, *Inventing Sam Slick: A Biography of Thomas Chandler Haliburton* (Toronto: University of Toronto Press, 2005), 53–4.
49. Ibid., 55.
50. Ibid.
51. Quoted in Lee, *Yankees of Connecticut*, 143.
52. Billington, *Westward Expansion*, 536.
53. Mark Twain, *A Connecticut Yankee in King Arthur's Court* (1889; New York: Washington Square Press, 1964), 4–5.

54. Pierson, *Tocqueville in America*, 497.
55. See Conforti, *Imagining New England*, 150–96. See also David Hackett Fischer, *Albion's Seed: Four British Folkways in America* (New York: Oxford, 1989). Closer to my own interpretation is a skeptical look at Fischer's thesis in Virginia DeJohn Anderson, "The Origins of New England Culture," *William and Mary Quarterly* 48 (2, 1991): 231–7.
56. Quoted in Gavin Weightman, *The Industrial Revolutionaries: The Making of the Modern World, 1776–1914* (New York: Grove Press, 2007), 229.
57. Sallie A. Marston, "Contested Territory: An Ethnic Parade as Symbolic Resistance", in Robert Weible ed. *The Continuing Revolution: A History of Lowell, Massachusetts* (Lowell: Lowell Historical Society), 1991, 220.
58. A common example is noted in Johnson, *History of the American People*, 182.

Chapter 2

1. Quoted in Hugh Brogan. *Alexis de Tocqueville: A Life* (New Haven, CT: Yale University Press, 2006), 180.
2. Andrew Roberts, *A History of the English-Speaking Peoples since 1900* (London: Weidenfeld & Nicolson, 2006), 447.
3. Quoted in Richard Lyle Power, *Planting Cornbelt Culture: The Impress of the Upland Southerner and the Yankee in the Old Northwest* (Indianapolis: Indiana Historical Society, 1953), 45.
4. See the 2000 US census ancestry map, online at http://upload.wikimedia.org/wikipedia/commons/thumb/a/a7/Census-2000-Data-Top-US-Ancestries-by-County.svg/1000px-Census-2000-Data-Top-US-Ancestries-by-County.svg.png.
   The ethnic ancestry designations are based on the plurality, however small, of the largest group. Along US 20 from the east, there are English only in northern New England, but Irish along the highway to New York. Then, except for a few counties dominated by African Americans, the rest, until the Mormon- (English-) dominated Idaho and eastern Oregon, is German, as is the rest of Oregon. It is interesting that counties in the South are dominated either by African Americans or by Scots-Irish.
5. Burr himself was of Yankee descent: his mother was the daughter of the famous Puritan preacher Jonathan Edwards and his father came from Fairfield, Connecticut. The third vice president of the United States, he killed Alexander Hamilton in a duel and was implicated, though not convicted, of trying to detach Mississippi Valley territory from the country.
6. Gore Vidal, *Empire* (New York: Random House, 1987), 403.
7. See, for example, Jack Whyte, *The Skystone* (Toronto: Viking Canada, 1992), the first of five novels in the series, *A Dream of Eagles*, which imagines how Roman Britons attempted to maintain their culture in the face of the disappearance of the Empire and an influx of Saxons between AD 367 and 448.

8. One geographer who has traced New England place names is John Leighly, "Town Names of Colonial New England in the West," *Annals of the Association of American Geographers* 68 (2, 1978): 233–48.
9. Before the Civil War, Michigan was considered the most Yankee state in the Union.
10. My approach is roughly similar to that pioneered by Daniel J. Elazar in his *Cities of the Prairie: The Metropolitan Frontier and American Politics* (New York: Basic Books, 1970), chap. 4.
11. Wilbur Zelinsky, *The Cultural Geography of the United States* (Englewood Cliffs, NJ: Prentice-Hall, 1973), esp. chap. 1; see also Jared M. Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton, 1997).
12. Only a small minority (5 percent) of emigrants chose New England as a destination before 1700, but the region constituted 40 percent of the English population of North America by then; see Conforti, *Saints and Strangers*, 49.
13. See Bernard Bailyn, *Voyagers to the West: A Passage in the Peopling of America on the Eve of the Revolution* (New York: Vintage Books, 1986).
14. See William Labov, *Principles of Linguistic Change*, vol. 3 (New York: Wiley-Blackwell, 1994; reprinted 2010), chap. 10.
15. It was institutionalized by the federal practice of surveying the land of the then Northwest Territory *before settlement* into squares generally called townships.
16. To Washington, the economic development of the Potomac River valley and its rise to be the main route into the interior was often said to be "the favorite object of his heart"; see Merritt Roe Smith, *Harpers Ferry Armory and the New Technology: The Challenge of Change* (Ithaca, NY: Cornell University Press, 1977), 27.
17. See Webb, *Born Fighting*.
18. Morgan notes that the early Puritan settlers made God so much their own that God "took on the character of a tribal deity" (*Puritan Family*, 168), and they struggled with the realization that, even among themselves, too many people were not faithful enough. Immigrants who lacked even the rudiments of this attachment to God were hardly welcome.
19. Margaret Ellen Newell, "Birth of New England in the Atlantic Economy", 26.
20. Winifred Barr Rothenberg, "The Invention of American Capitalism: The Economy of New England in the Federal Period," in *Engines of Enterprise: An Economic History of New England*, ed. Peter Temin (Cambridge, MA: Harvard University Press, 2000), 75.
21. Peter Temin, "Introduction," in *Engines of Enterprise: An Economic History of New England*, ed. Peter Temin (Cambridge, MA: Harvard University Press, 2000), 8.
22. Alan Taylor, *William Cooper's Town: Power and Persuasion on the Frontier of the Early American Republic* (New York: Vintage Books, 1995), 90.
23. Paul Horgan, *Great River: The Rio Grande in North American History* (New York: Wesleyan University Press, 1984), 624.
24. Bailyn, *Voyagers to the West*, 486.
25. Marietta was begun by Rufus Putnam, a land surveyor, veteran of what Americans call the French and Indian War (part of the wider conflict known as the Seven Years' War) and the American Revolution, and a founder of the Ohio Company. Putnam was instrumental in getting Congress to ban slavery in the Northwest Territory and from 1786 to 1803 served as America's first surveyor-general. See Billington, *Westward Expansion*, 213.

26. Yankees moved into what is now Canada as well. When the Acadians were expelled from their Nova Scotian farms in 1755, their places were occupied by Yankee "planters." Loyalist Yankees moved north from Vermont and New Hampshire after the Revolution and their influence contributed to rebellions in Upper and Lower Canada in 1837. Still others moved west across the Niagara frontier after the War of 1812
27. Bill Bryson, *A Walk in the Woods* (New York: Broadway Books, 1998), 210–12.
28. George F. Kennan, *Sketches from a Life* (New York: Pantheon Books, 1989), 207.
29. For a succinct description of the Auburn system, see Milton M. Klein, *The Empire State: A History of New York* (Ithaca, NY: Cornell University Press, 2001), 344. Its evolution is best described in Pierson, *Tocqueville in America*, 94–8. William Brittin built the prison at Auburn and was its first warden. Given the construction contract for the Genesee River bridge at Rochester in 1820, he proposed to bring 150 convicts to help build it. The locals in what was then a small town of 1,500 were not happy, and in the end he employed only thirty. The convicts were told they would be pardoned by Governor DeWitt Clinton if they worked for canal wages for the duration of their sentences, but that they would be punished if they tried to escape — a quarter of them nevertheless got away. See Gerard Koeppel. *Bond of Union: Building the Erie Canal and the American Empire* (Cambridge, MA: Da Capo Press, 2009), 327–8. Ice flows in the spring breakup on the river and Brittin's death in 1822 led to a new and different contract. See Peter L. Berstein, *Wedding of the Waters: The Erie Canal and the Making of a Great Nation* (New York: W.W. Norton, 2005), 271.
30. At the beginning of the twentieth century, a New Yorker, Thomas Mott Osborne, warden at Auburn and Sing Sing prisons, led a new impulse for prison reform, arguing for indeterminate sentences, a degree of prisoner self-government, and a greater focus on reintegration of prisoners into society; see Klein, *Empire State*, 524–5.
31. See Leo Damrosch, *Tocqueville's Discovery of America* (New York: Farrar, Straus & Giroux, 2010), 11.
32. There seems to be little in de Tocqueville's background to indicate a prior interest in America, other than his exposure to a distant cousin's novels about the country. The cousin, François-René de Chateaubriand, had written his latest story about America four years before de Tocqueville's visit. A relatively famous book on penal systems in Europe and the United States had been published in Paris in 1827 might have acted as a basis for their research. See Brogan, *Alexis de Tocqueville*, 136–40, 142–3.
33. Ibid., 142. De Tocqueville and de Beaumont wasted no time. Gaining approval from the government in February 1831, they were on their way by the end of March.
34. Ibid., 145.
35. He and de Beaumont read everything they could lay their hands on about penal reform and visited some of the French facilities before presenting a well-organized brief to the minister; see ibid., 142–3.
36. Ibid., 141.
37. Ibid., 159.
38. One of his frequent hosts, Nathaniel Prime, a Yankee from Massachusetts, was reputed to be the richest man in New York City; see Damrosch, *Tocqueville's Discovery of America*, 19.
39. Pierson, *Tocqueville in America*, 100–3.

40. De Tocqueville noted: "We hoped to obtain valuable information on whatever central government there is in this country. The offices and registers were all open to us, but as far as *government* goes, we're still looking for it. Really, it doesn't exist at all"; Damrosch, *Tocqueville's Discovery of America*, 47.
41. Brogan, *Alexis de Tocqueville*, 162–3.
42. Later in the 1830s, another French traveler, Michel Chevalier, did pay attention to economic and cultural matters, but his subsequent publications did not receive the same attention as de Tocqueville's; see Robert Weible, *The World of the Industrial Revolution: Comparative and International Aspects of Industrialization* (Lanham, MD: Rowman & Littlefield, 1987), 21. See also Thomas Southcliffe Ashton and Pat Hudson, *The Industrial Revolution, 1760–1830* (Oxford: Oxford University Press, 1997), 169–70; and Pierson, *Tocqueville in America*, 174–5.
43. One commentator has noted that the flour barrel began to replace the beaver pelt as the symbol of New York in the 1820s; see Berstein, *Wedding of the Waters*, 369. The cost of transporting a ton of flour from Buffalo to New York City dropped by 95 percent as a result of the completion of the canal; see John Steele Gordon, *The Great Game: The Emergence of Wall Street as a World Power, 1653–2000* (New York: Scribner, 1999), 56–7.
44. Three weeks after the two Frenchmen left Albany, the locomotive "The DeWitt Clinton" hauled its first trainload of politicians from Albany to Schenectady.
45. De Beaumont was startled that the governor could receive them in the boardinghouse parlor without ceremony and easily discuss the affairs of his brother the grocer and his cousin the salesman; Damrosch, *Tocqueville's Discovery of America*, 58.
46. Ibid., 60–1.
47. Brogan, *Alexis de Tocqueville*, 170–2.
48. Having taken a few steamboats in America, he commented to his mother: "these same Americans, who have never discovered a single law of mechanics, have given to navigation a new machine that is changing the face of the earth"; Damrosch, *Tocqueville's Discovery of America*, 45.
49. Brogan, *Alexis de Tocqueville*, 138.
50. De Tocqueville later mentioned to a friend that Boston is where he would go were he to live in America. He felt its upper classes to be most like the cultured gentry of Europe; ibid., 180.
51. Ibid., 200.
52. Witold Rybczynski, *City Life* (New York: Harper Perennial, 1996), 108–9.
53. Brogan, *Alexis de Tocqueville*, 164.
54. Ibid., 86, 89, 351–2.
55. Attitudes toward free blacks actually had deteriorated since the Revolution; see Damrosch, *Tocqueville's Discovery of America*, 28–9.
56. Washington Irving characterized the attitude when he coined the term "the almighty dollar, that great object of devotion throughout the land"; ibid., 25.
57. Historian Merritt Roe Smith documents the problems that a Maine Yankee, John Hall, had in attempting to mechanize the process of making muskets at the federal arsenal in Harpers Ferry, then part of Virginia. The rural and relatively uneducated workers resisted attempts to introduce new technology from the time Hall was sent there until the arsenal was destroyed in 1861 at the outset of the Civil War. Although it was not his intent,

Smith highlights the contrast between what the locals called "Yankeeism" and their way of life. See Smith, *Harpers Ferry Armory*.

58. As late as the 1970s, my father-in-law, a city manager in Michigan, wore "prison shoes," and we all knew that the state's auto license plates were made by prisoners.
59. Rybcynski, *City Life*, 112.
60. "Navvies," short for "navigators," was the name mockingly given to laborers in England who dug the canal system. In America, the term was applied to Irish laborers. See, for instance, Gavin Weightman, *The Industrial Revolutionaries: The Making of the Modern World, 1776–1914* (New York: Grove Press, 2007), 162–3.
61. For a similar discussion of New England in the mid-1900s, see Conforti, *Imagining New England*, 206–14
62. Ibid., chap. 3, explores this identity of New England morés with American ones. For a more detailed expression of this process, see Power, *Planting Cornbelt Culture*.
63. Sherwood Anderson, *Winesburg, Ohio: A Group of Tales of Small-town Ohio Life* (New York: B.W. Huebsch, 1919), 62–3.
64. Zelinsky, *Cultural Geography of the United States*, 120.

Chapter 3

1. Peter Aleshire, *Arizona Highways* (April 2005), 3.
2. Rybcynski, *City Life*, 34.
3. Quoted in John W. Oliver, *A History of American Technology* (New York: Ronald Press, 1956), 484.
4. *Collier's Encyclopedia*, vol. 12 (New York: P.F. Collier, 1993), 113–4.
5. For a succinct explanation of the problems encountered when the federal government got involved in early nineteenth-century road financing, see Algeo, *Harry Truman's Excellent Adventure*, 86. See also Carter Goodrich, *Government Promotion of American Canals and Railroads, 1800–1890* (New York: Columbia University Press, 1960), 19–38.
6. See United States, Department of Transportation, Federal Highway Administration, *America's Highways: 1776 - 1976* (Washington, DC: US Government Printing Office, 1977), 17.
7. Jack Beatty, *Colossus: How the Corporation Changed America* (New York: Broadway Books, 2001), 60; Klein, *Empire State*, 311.
8. By comparison, the Romans, 1,500 years earlier, could boast of a paved road system 70,000 miles in length; see Christopher Finch, *Highways to Heaven: The Autobiography of America* (New York: HarperCollins, 1992), 20.
9. Eric Hobsbawn, *The Age of Revolution, 1789–1848* (New York: Barnes & Noble, 1962), 171.
10. See, for example, the fall and rise of roads in Connecticut (Lee, *Yankees of Connecticut*, 100–2).
11. United States, *America's Highways*, 14–15.
12. Ray Spangenburg and Diane Moser, *The Story of America's Roads* (New York: Facts on File, 1992), 41.

13. In 1900, Iowa's roads were said to have more steep grades than those in Switzerland; ibid., 40.
14. Laura Byrne Paquet, *Wanderlust: A Social History of Travel* (Fredericton, NB: Goose Lane Editions, 2007), 134–5.
15. David Harlick, *No Place Distant* (Washington, DC: Island Press, 2002), 15–16.
16. Dan McNichol, *The Roads that Built America: The Incredible Story of the U.S. Interstate System* (New York: Sterling, 2006), 36.
17. Dixon Ryan Fox and Robert V. Remini, *The Decline of Aristocracy in the Politics of New York: 1801–1840* (New York: Harper & Row, 1965), 6; Thomas J. Schlereth, *Victorian America: Transformations in Everyday Life, 1876–1915* (New York: HarperCollins, 1991), 221; Spangenburg and Moser, *Story of America's Roads*, 41. See also Harlick, *No Place Distant*, 15–16.
18. Spangenburg and Moser, *Story of America's Roads*, 42–4, 50.
19. Merritt Ierley, *Traveling the National Road: Across the Centuries on America's First Highway* (Woodstock, NY: Overlook Press, 1990), 180. The Office of Road Inquiry's first "Agent" was a League of American Wheelmen activist, General Roy Stone; see McNichol, *Roads that Built America*, 39.
20. Patton, *Open Road*, 145–8. The first use of asphalt as a road surface was on Fifth Avenue in New York City in 1872; McNichol, *Roads that Built America*, 39
21. Patton, *Open Road*, 55–6.
22. United States, *America's Highways*, 80. See also William Leach, *Land of Desire: Merchants, Power, and the Rise of a New American Culture* (New York: Vintage, 1993), 182–5.
23. Robert Hendrickson, *The Grand Emporiums: The Illustrated History of America's Great Department Stores* (New York: Stein and Day, 1980), 49.
24. Harvey Wish, *Society and Thought in Modern America: A Social and Intellectual History of the American People from 1865*, 2nd ed. (New York: David McKay, 1962), 106.
25. Ibid., 107.
26. See Pete Davies, *American Road: The Story of an Epic Transcontinental Journey at the Dawn of the Motor Age* (New York: Henry Holt and Company, 2002), 14. By 1925, Jackson's sixty-three-day trip could be duplicated in about five days. See also Tom Lewis, *Divided Highways: Building the Interstate Highways Transforming American Life* (New York: Penguin Group, 1997), 50; Spangenburg and Moser, *Story of America's Roads*, 50. A year later, in 1904, a caravan of seventy cars left the East Coast for the St. Louis World's Fair; fifty-eight made it, producing a publicity sensation when they arrived; see Algeo, *Truman's Excellent Adventure*, 87–8. In 1909, Alice Huyler Ramsey became the first woman to drive across the country, taking three female companions on a forty-one-day trip from New York to San Francisco.
27. Spangenburg and Moser, *Story of America's Roads*, 47. By 1917, all the states had some form of road program
28. As late as 1908, Kansas did not have a single road that joined two of its borders; ibid., 44.
29. In September 1899, a New York City real estate agent was struck by an electric taxi as he alighted from a streetcar, becoming the first person killed by an automobile in America; Algeo, *Harry Truman's Excellent Adventure*, 36. In a reverse of that accident, my grandfather was killed in 1926 when he was hit by a car and thrown into the path of a streetcar in Saginaw, Michigan.
30. Spangenburg and Moser, *Story of America's Roads*, 109.

31. E.W. James, ‹‹Making and Unmaking a National System of Marked Roads,›› *American Highways* 12 (4, 1933): 16–18.
32. Fox and Remini, *Decline of Aristocracy*, 51; Spangenburg and Moser, *Story of America's Roads*, 80–1.
33. United States, *America's Highways*, 109. Apparently, there was a proliferation of "Dixie" and "Yellowstone" Highways; see Patton, *Open Road*, 44–5. Bruce Springsteen mentions the Dixie highway in his song, "Darlington County."
34. Schlereth, *Victorian America*, 222.
35. David Haward Bain, *The Old Iron Road: An Epic of Rails, Roads, and the Urge to Go West* (New York: Penguin, 2005), 56; Oliver, *History of American Technology*, 485.
36. Fox and Remini, *Decline of Aristocracy*, 50. The corruption that came with the building of the transcontinental railroads had not been forgotten; see Patton, *Open Road*, 145.
37. Davies, *American Road*, 222; Schlereth, *Victorian America*, 222. See also Paquet, *Wanderlust*, 140.
38. Quoted in Paquet, *Wanderlust*, 139.
39. Fox and Remini, *Decline of Aristocracy*, 34.
40. McNichol, *Roads that Built America*, 61.
41. Fox and Remini, *Decline of Aristocracy*, 11; Patton, *Open Road*, 191.
42. Oliver, *History of American Technology*, 566.
43. Fox and Remini, *Decline of Aristocracy*, 89.
44. McNichol, *Roads that Built America*, 61.
45. Davies, *American Road*, 216.
46. Ierley, *Traveling the National Road*, 180. It was a 1/3–2/3 shared-cost program of which only thirteen states and twenty-eight counties availed themselves.
47. An alternative story is that President Woodrow Wilson was about to veto the act, but changed his mind after a report of a sighting of a German submarine in Baltimore harbor brought the road issue into the national defense picture (Oliver, *History of American Technology*, 486).
48. Fox and Remini, *Decline of Aristocracy*, 13; Patton, *Open Road*, 45.
49. Willis F. Dunbar and George S. May, *Michigan: A History of the Wolverine State*, 2nd ed. (Grand Rapids, MI: William B. Eerdmans, 1965), 493.
50. Another source refers to the National League for Good roads, formed in 1893, and the National Good Roads Association, organized around the turn of the century; see Johnson, *History of the American People*, 428, 485.
51. Dunbar and May, *Michigan*, 492–3. The federal funds were matching ones and focused on roads where mail was delivered. A similar story can be seen in Pennsylvania; see Davies, *American Road*, 45–7.
52. Spangeburg and Moser, *Story of America's Roads*, 51–2. Part of that industry was the traffic light, invented by a Cleveland tinkerer, Garrett Morgan, the son of former slaves. He devised a light with red and green signals and a buzzer, which was installed in Cleveland in 1914; see Stephen Van Dulken, *Inventing the 20th Century: 100 Inventions that Shaped the World from the Airplane to the Zipper* (New York: Barnes & Noble, 2007), 78.
53. Some ideas related to the core industry of trucking can be found in Finch, *Highways to Heaven*, 331–3.
54. Davies, *American Road*, 216.

55. Seventy-five years earlier, in 1847, when railroads were still new, the editor of the Toledo Blade, J.W. Scott, called for a similar grid to link the sections of the country — two railroads north to south and four east to west — before anyone had completed a rail line five hundred miles long. See Archie Hobson, *Remembering America: A Sampler of the WPA American Guide Series* (New York: Collier Macmillan, 1987), 2–3.
56. Ibid., [110]. See also Lewis, *Divided Highways*, 12–21; and Patton, *Open Road*, 45.
57. Fox and Remini, *Decline of Aristocracy*, 20.
58. ‹‹The United States Numbered System,›› *Ameri*[c]*an Highways* 11 (3, 1[93]2): [16].
59. James, ‹‹Making and Unmaking a System of Marked Roads,›› 17 -.
60. Paquet, *Wanderlust*, 141.
61. Finch, *Highways to Heaven*, 77. Olmstead and Vaux provided prototypes of parkways in their designs for Central Park and later Prospect Park, Brooklyn. They added parkways to their designs for other major cities before the turn of the twentieth century — see Lewis, *Divided Highways*, 28–9; see also Patton, *Open Road*, 67. They seem to have derived their inspiration in part from Baron Haussmann's Parisian boulevards and from some divided American streets, such as Commonwealth Avenue in Boston, later a part of US 20 for a number of years.
62. Patton, *Open Road*, 70.
63. Fox and Remini, *Decline of Aristocracy*, 68.
64. Patton, *Open Road*, 71–2, 141 The first stretch of California freeway was opened in 1940.
65. Finch, *Highways to Heaven*, 158.
66. Spangenburg and Moser, *Story of America's Roads*, 57.
67. Algeo, *Harry Truman's Excellent Adventure*, 170–1.
68. Ierley, *Traveling the National Road*, 203. By this time, many states had copied Pennsylvania's turnpike approach, so that by the year after the passage of the *Defense Highway Act*, one could travel from the East Coast to Chicago without meeting a traffic light. Meeting a toll booth was another matter. See Algeo, *Harry Truman's Excellent Adventure*, 171.
69. Fox and Remini, *Decline of Aristocracy*, 108.
70. Finch, *Highways to Heaven*, 226.
71. Rybcynski, *City Life*, 160–1.
72. The federal system never stopped growing despite the Interstates, and by the late 1980s totaled 301,000 miles. The Interstate system also grew a bit by then, to 44,000 miles. See Ierley, *Traveling the National Road*, 203.
73. Patton, *Open Road*, 267.
74. President Dwight Eisenhower saw the system's potential for economic development, though not this implication. It was, however, an extension of the interest in internal improvements that had driven the Whigs and early Republicans; see ibid., 87, 115.
75. There is an earlier book that follows US 20 as it crosses the continent. See Mac Nelson, *Twenty West: The Great Road across America* (Albany: State University of New York Press, 2008), which looks at themes, such as literature and political power, as well as pointing out roadside attractions and containing many photographs. Its approach is to follow these themes across the continent.
76. For a description of the experience of being a passenger on the post road, see Stewart H. Holbrook, *The Old Post Road: The Story of the Boston Post Road* (New York: McGraw-Hill, 1962), 13–16.

77. Spangenburg and Moser, *Story of America's Roads*, 6–7. The early roads were often no more than paths, sometimes widened to accommodate a wagon. Coaches — from a Hungarian named Kocz, a renowned maker of enclosed carriages — were not used much because of the state of the roads. See John H. Lienhard, *Inventing Modern: Growing Up with x-Rays, Skyscrapers, and Tailfins* (New York: Oxford University Press, 2003), 117; and Thomas Crump, *A Brief History of the Age of Steam: The Power that Drove the Industrial Revolution* (New York: Carroll & Graf, 2007), 3–5.
78. Originally, three post roads ran from Boston to New York. US 20 parallels or replaces some of the northerly, or "old" post road. Apparently parts of the original route were later sold off as railroad right-of-way; Holbrook, *Old Post Road*, 11.
79. Ibid., 10.
80. Klein, *Empire State*, 160.
81. Holbrook, *Old Post Road*, 8. Because postage was assessed by distance at the time, Franklin established milestones on the post roads, eliminating controversy (7).
82. A Corridor Commission was also established to provide technical services and financial assistance to communities and organizations interested in forming partnerships to preserve the Valley's heritage.
83. Worcester has many claims to industrial fame, including the company that produced the first barbed wire, which had a lot to do with the "taming" of the Western plains (Holbrook, *Old Post Road*, 116–8).
84. Taylor, *William Cooper's Town*, 31–2; see also Peter J. Hugill, *Upstate Arcadia: Landscape, Aesthetics, and the Triumph of Social Differentiation in America* (Lanham, MD: Rowman & Littlefield, 1995), 62–3. Elsewhere (see, for example, Klein, *Empire State*, 267), the Great Western Pike is identified as the road paralleling the Erie Canal. Yet the third Great Western Pike definitely ran along the higher ground to the south.
85. There is some confusion about the original designation of US 20. Lewis (*Divided Highways*, 290) suggests it was first located along the Erie Canal route and not uphill to the south.
86. A 1932 promotional piece for the turnpike noted that it had been completed as far as Syracuse in 1811, partly as a make-work project during the depression caused by the 1807 US trade embargo with the warring European powers leading up to the War of 1812; during the war , it played an important role in getting supplies to the Niagara frontier; see Cherry Valley Turnpike Association, "The Cherry Valley Turnpike" (Waterville, NY: Cherry Valley Turnpike Association, 1932), 2–3.
87. Hugill, *Upstate Arcadia*, 176, 192.
88. Carol Poh Miller and Robert A. Wheeler, *Cleveland: A Concise History, 1796–1996*, 2nd ed. (Bloomington: Indiana University Press, 1997), 19.
89. Richard F. Weingroff, "From Names to Numbers: The Origins of the U.S. Numbered Highway System" (Washington, DC: Department of Transportation, Federal Highways Administration, n.d.); available online at http://www.fhwa.dot.gov/infrastructure/numbers.cfm. Before this the highway that connected Portland, Oregon, and the Pacific to the east was US 26; this later portion of US 20, in defiance of the national grid, crosses US 26 in Idaho and reaches the ocean to its south.
90. See Bill London, *Country Roads of Idaho* (Castine, ME: Country Roads Press, 1995).
91. Ibid., 67–8.

92. Least Heat-Moon, *Blue Highways*, 222.

Chapter 4

1. Quoted in Holbrook, *Old Post Road*, 138. Longfellow composed this after he and his bride visited the Springfield Armory (not Watertown) in 1843. She had likened the stacked musket barrels to a set of organ pipes.
2. Quoted in James C. Scoville, "The Taylorization of Vladimir Ilich Lenin," *Industrial Relations* 40 (4, 2002): 620–1.
3. Kirsten Downey, *The Woman Behind the New Deal: The Life and legacy of Frances Perkins* (New York: Anchor Books, 2010), 32.
4. The site of Springfield's armory was said to have been personally selected by George Washington in 1776 and was the site of a major clash in Shay's Rebellion in 1787. When Washington toured New England as president in 1789, he inspected the armory (Holbrook, *Old Post Road*, 138–9).
5. Oliver, *History of American Technology*, 93.
6. I am not sure of the difference, if any, between an "arsenal" and an "armory." I suspect an arsenal made weapons and an armory could both make and store weapons. At any rate, the words seem to be used pretty interchangeably in the literature.
7. Smith, *Harpers Ferry Armory*, 28. Washington was determined that the main arsenal be located at Harpers Ferry, upstream from the new capital.
8. Friends of Watertown Free Publications and Watertown Historical Society, *Watertown* (Charleston, SC: Arcadia Publications, 2002), 56. In 1911, the Watertown Arsenal employed about four hundred people and its facilities and equipment were mostly of Civil War vintage and obsolete; see Robert Kanigel, *The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency* (New York: Viking Penguin, 1997), 450–1.
9. Smith (*Harpers Ferry Armory*, 272–5) notes another short walkout at the Arsenal in 1842, the "clock strike," when workers protested the introduction of a time clock as an intrusion on their traditional freedom to come and go as they pleased.
10. Kanigel, *One Best Way*, 500.
11. Ibid., 74.
12. Max Weber, *The Protestant Ethic and the Spirit of Capitalism* (1904; London: Routledge Classics, 2001).
13. "The American boy of 1854," Henry Adams wrote, "stood nearer the Year 1 than the Year 1900"; quoted in Beatty, *Colossus*, 97.
14. Robert B. Gordon and Patrick M. Malone, *The Texture of Industry: An Archaeological View of the Industrialization of North America* (New York: Oxford University Press, 1994), 386–8. By 1828, a couple of arms manufacturers could make interchangeable parts for muskets, but these depended on artisans filing the pieces down until they fit standardized gauges. The gauge was the innovation; precision-cutting machine tools were a long way off.

15. Andro Linklater, *Measuring America: How the United States Was Shaped by the Greatest Land Sale in History* (New York: PLUME Penguin Group, 2003), 237.
16. This interest was shared by a young sawyer, John Muir, whose study of his employers' sawmill produced observations much like those of Taylor. Muir went on to fame as a conservationist and founder of the Sierra Club. See Frederick Turner, *Rediscovering America: John Muir in His Time and Ours* (San Francisco: Sierra Club Books, 1985), 123–5.
17. Kanigel, *One Best Way*, 351, 379.
18. Shop culture, especially when employees have been rewarded for their performance under one set of rules, is hard to alter, except around the edges; Schlereth, *Victorian America*, 56, 62.
19. Ibid., 56.
20. In this, Taylor was preceded by Charles Babbage, the Englishman who first conceived the computer, and who is credited with producing the first text on operational analysis in 1832, well before its emergence in America. Babbage's ideas, however, did not have much effect on contemporary British production practices; see Wade Rowland, *Spirit of the Web: The Age of Information from Telegraph to Internet* (Toronto: Somerville House, 1997), 219.
21. Frank Gilbreth, the model of the father in the film, *Cheaper by the Dozen*, measured individual movements in a task, reducing standardized partial movements to "therbligs," which, by changes in the task and placement of tools, could be reduced, thus speeding up the task without adding to the worker's task; see Darren Wershler-Henry, *The Iron Whim: A Fragmented History of Typewriting* (Toronto: McClelland & Stewart, 2005), 144.
22. Henry Ford later could say that, of the 7,882 actions needed to build a Model T, only 949 required whole bodies; the rest could be done by disabled people. Of course, this meant that workers' ethnicity and race also could be ignored — and eventually were (Wershler-Henry, *Iron Whim*, 143).
23. Gail Cooper, *Air-Conditioning America: Engineers and the Controlled Environment, 1900–1960* (Baltimore: Johns Hopkins University Press, 1998), 47.
24. Kanigel, *One Best Way*, 262.
25. Schlereth, *Victorian America*, 65–6.
26. Taylor's paper has been republished numerous times; the edition used in this writing is in Frederick Winslow Taylor, *The Principles of Scientific Management* (New York: W.W. Norton, 1967).
27. Hugh G.J. Aitken, *Taylorism at Watertown Arsenal: Scientific Management in Action, 1908–1915* (Cambridge, MA: Harvard University Press, 1960), 172–3.
28. Ibid., 40–1.
29. Ibid., 49–57.
30. Ibid., 56–7, 70.
31. Barth later worked at two other arsenals as well; ibid., 81–2.
32. The text of the petition is in ibid., 150.
33. Frank and Lillian Gilbreth had published their *Motion Study* in 1911; see Wershler-Henry, *Iron Whim*, 146.
34. Kanigel, *One Best Way*, 472.
35. Ibid., 472–4.
36. Taylor, *Principles of Scientific Management*, 6–8.

37. Kanigel, *One Best Way*, 482–4.
38. Anthony Sampson, *Company Man: The Rise and Fall of Corporate Life* (New York: Random House, 1995), 42.
39. Ibid., 506.
40. Kanigel, *One Best Way*, 12.
41. Ibid., 501.
42. Kanigel, *One Best Way*, 489–90.
43. Cooke went on to head the rural electrification program of the New Deal in the 1930s. He once stated, "[w]e shall never fully realize . . . the dreams of democracy until the principles of scientific management have permeated every nook and cranny of the working world"; quoted in *Business Week*, 18 April 18, 1964, 132.
44. Kanigel, *One Best Way*, 493.
45. Ibid., 486.
46. Ibid., 488.
47. Ibid., 489.
48. Ibid., 501–2.
49. Charles Petersen, "Google and Money," *New York Review of Books* 57 (19, 2010): 60, 62.
50. Downey, *Woman Behind the New Deal*, 33–4.
51. The fire was the worst workplace disaster in New York City for ninety years, until 9/11. At the time, workplace accidents killed an average of a hundred people a day across the country; see David Von Drehle, *Triangle: The Fire that Changed America* (New York: Grove Press, 2003), 3.
52. Ibid., 3–4.
53. Downey, *Woman Behind the New Deal*, 6–8.
54. This was consistent with the times, as the use of social science information in dealing with social problems had gained serious credibility only in the early 1900s (Von Drehle, *Triangle*, 196–8)
55. Perkins was part of a broader progressive movement that attracted thousands of bright, young people to work to alleviate social problems (ibid., 15–16). Her approach in Philadelphia in 1907 was one of researching an issue about women, which her Addams House friend, Grace Abbott's sister Edith, had pioneered with her PhD work at the University of Chicago in 1905. See Ellen Fitzpatrick, *History's Memory: Writing America's Past, 1880–1980* (Cambridge, MA: Harvard University Press, 2004), 58. By 1910, there were over four hundred such facilities in America (Von Drehle, *Triangle*, 197; see also Klein, *Empire State*, 504–8).
56. Von Drehle, *Triangle*, 195.
57. About this time, the value of scientific, or at least rigorous, well-presented facts began to affect court cases as well as public opinion (ibid., 197).
58. In a tactic that presaged the fair trade coffee movement in our day, the Consumers' League provided a white tag for clothes that were made in factories with progressive work practices and encouraged retailers and consumers to look for it when buying clothes (Downey, *Woman Behind the New Deal*, 29–30).
59. Many of New York's feminine elite joined with the strikers (Klein, *Empire State*, 498).
60. Edwin G. Burrows and Mike Wallace, *Gotham: A History of New York City to 1898* (New York: Oxford University Press, 1999), 309–10.
61. Von Drehle, *Triangle*, 15; Klein, *Empire State*, 497.

62. The use of steam power and, by the end of the nineteenth century, electricity, plus the invention of the sewing machine freed the textile industry from the confines of water power and the New England rivers. Making garments moved to where the market was — in large cities such as New York (ibid., 8, 15, 38–9). The shirtwaist was a type of blouse made for working women that became very fashionable in the 1890s and beyond when popularized by the magazine artist Charles Dana Gibson as the blouse of the "Gibson girl" (44–7).
63. Tammany had lost the 1909 city elections badly to progressives because of inattention to its voting base (ibid., 53, 189–90).
64. Ibid., 173–5. He lost the Triangle case, but got as far as becoming governor of the State.
65. Klein, *Empire State*, 499.
66. The League had been founded in 1890 and both employers and employees were ineligible to join, which meant that middle- and upper-class women dominated it. It was not a mass organization, but focused on research and publicity in order to change legislation (ibid., 497).
67. Von Drehle, *Triangle*, 201–5.
68. Klein, *Empire State*, 499.
69. Downey, *Woman Behind the New Deal*, 45. She hated the nickname, especially its variation, "Ma" Perkins.
70. Von Drehle, *Triangle*, 212.
71. Ibid., 210–12.
72. Downey, *Woman Behind the New Deal*, 41–3.
73. Klein, *Empire State*, 500.
74. In an exchange between Tammany boss Charles Murphy and Perkins, Murphy got her to admit that she was behind the bill limiting work hours for women, which Murphy unsuccessfully opposed. At the end he said, "[i]t is my observation that the bill made us many votes. I will tell the boys to give you all the help they can with this new bill. Good bye" (Von Drehle, *Triangle*, 218).
75. Klein, *Empire State*, 521.
76. Downey, *Woman Behind the New Deal*, 49–52.
77. Klein, *Empire State*, 545.
78. Ibid., 564.
79. Ibid., 577.
80. Ibid, p.579
81. My late father-in-law worked in the Civilian Conservation Corps as a young man and, from the number of times he recounted his adventures, it clearly was a defining moment in his life.
82. In 1961, she helped dedicate a fiftieth anniversary plaque on the building where the Triangle fire occurred; the building is now part of New York University (Von Drehle, *Triangle*, 263).
83. Beatty, *Colossus*, 271; it would be forgotten in the wake of the 2007–08 Crash.
84. Weber, *Protestant Ethic*, xxxi–xxxix.
85. David Brooks, "The responsibility deficit," *New York Times*, September 23, 2010.

Chapter 5

1. Temin, "Introduction," 1.
2. Quoted in Bernard DeVoto, *The Year of Decision, 1846* (1942; New York: St. Martins Press, 2000), 210.
3. The term "industrial revolution" seems to have been invented by the French economist Louis Auguste Blanqui in 1827.
4. See, for instance, Burrows and Wallace, *Gotham*, 170. For an interesting history of many of the British, and some French and Americans, whose efforts led to this revolution, see Weightman, *Industrial Revolutionaries*.
5. See, for instance, Peter Padfield, *Maritime Power: The Struggle for Freedom* (Woodstock, NY: Overlook Press, 2003).
6. See David S. Landes, *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor* (New York: W.W. Norton, 1998), 186.
7. These were not incorporated, as British policy discouraged the use of this instrument. The only one of note to have been incorporated was that of Robert Owen at New Lanark, in Scotland; see Weible and Lowell Historical Society, *Continuing Revolution*, 67n5.
8. Weible, *World of the Industrial Revolution*, 16. As well, the product being processed had to be right, at least for the first essay into mechanized production. Cotton proved to be most useful, with wool a close second (Landes, *Wealth and Poverty of Nations*, 191). One commentator states that the cotton textile industry was, in itself, the prime motivator of the industrial revolution; see Weible, *World of the Industrial Revolution*, 16.
9. Alfred D. Chandler Jr., *The Visible Hand: The Managerial Revolution in American Business* (Cambridge, MA: Belknap Press of Harvard University Press, 1977), 54–5.
10. John Steele Gordon, *The Business of America* (New York: Walker Publishing, 2001), 19.
11. Apparently, the Chinese had water mills for spinning hemp in the 1100s; Landes, *Wealth and Poverty of Nations*, 55.
12. See, for instance, Johnson, *History of the American People*, 314.
13. "Putting out" had a mixed history in Europe, where weaving guilds in Italian and Dutch towns attacked village weavers and broke their looms to prevent them from undercutting their business. This apparently did not happen, or succeed, in England, where, in the fifteenth century, half the woollen cloth was "put out" to rural people. This so lowered costs that it reduced exports of raw wool and moved England into exporting the finished product, eventually stimulating the eighteenth-century revolution in textile manufacturing that grew out of cotton processing. See Landes, *Wealth and Poverty of Nations*, 43.
14. Eric Hobsbawm, *The Age of Capital, 1848–1875* (London: Cardinal, 1991), 48–9; and idem, *Age of Revolution*, 34–5.
15. Weible and Lowell Historical Society, *Continuing Revolution*, 6.
16. Burrows and Wallace, *Gotham*, 170.
17. Landes, *Wealth and Poverty of Nations*, 296.
18. A British visitor to New England, Lord Adam Gordon, complained in 1765 that "the levelling principle here, everywhere, operates strongly and takes the lead. Everybody has property, and everybody knows it" (ibid.).

19. Johnson, *History of the American People*, 219.
20. Jefferson did write to a Bostonian in 1816, however, that, "[e]xperience has taught me that manufactures are now as necessary to our independence as to our comfort"; see Dalzell, *Enterprising Elite*, 42; see also Arthur M. Schlesinger Jr., *The Age of Jackson*, 2nd ed. (Old Saybrook, CT: Konecky & Konecky, 1971), 18.
21. Jonathan Prude, "Capitalism, Industrialization, and the Factory in Post-revolutionary America," in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul A. Gilje (Lanham, MD: Rowman & Littlefield, 1997), 90–2.
22. Johnson, *History of the American People*, 218–9.
23. Ibid., 232.
24. Gordon and Malone, *Texture of Industry*, 95–7.
25. The works were operated sporadically after 1652 and closed in 1676; see Gordon and Malone, *Texture of Industry*, 68.
26. Newell, "Birth of New England in the Atlantic Economy," 42.
27. Government support for economic development can be traced back to Medieval times, helping to develop contractual law, provide labor, and enforce commercial codes to foster business activity and generate tax revenue (Landes, *Wealth and Poverty of Nations*, 44).
28. Newell, "Birth of New England in the Atlantic Economy," 47.
29. Temin, "Introduction," 7.
30. Holbrook, *Old Post Road*, 191.
31. A Welshman, John Adams Dagyr, arrived in Massachusetts in 1750 and started a small shoemaking business that eventually grew into a large industry that employed a quarter of the Massachusetts labor force in the mid-1800s. It derived some technology from the textile mills that came later; Oliver, *History of American Technology*, 48.
32. Newell, "Birth of New England in the Atlantic Economy," 62.
33. Temin, "Introduction," 7.
34. The basic technology was provided by Thomas Somers, who had been sent by some Baltimore merchants to Britain to learn about the mechanized cotton-carding process. When he returned, their interests had shifted, so he took his knowledge to Boston, where he impressed the Cabots. Incorporated in 1789, the mill contained roller cards and spinning jennies. The mill closed in 1807. See David J. Jeremy, *Transatlantic Industrial Revolution: The Diffusion of Textile Technologies between Britain and America, 1790–1830* (Oxford: Blackwell, 1981), 17, 83; and Dirk J. Struik, *Yankee Science in the Making* (New York: Collier Books, 1962), 191.
35. Burrows and Wallace, *Gotham*, 232.
36. These had been struggling, as Napoleon's closing the European continent to British goods had led to their being dumped in America (Jeremy, *Transatlantic Industrial Revolution*, 83).
37. Rothenberg, "Invention of American Capitalism," 96.
38. Ibid., 93.
39. Chandler Jr., *Visible Hand*, 56.
40. New York, in contrast, did not adopt factory methods in any serious way until the Civil War. Its textile industry was virtually driven out of business by the big New England mills, with production declining from an estimated 16.5 million yards in 1825 to less than 1 million in 1855 (Klein, *Empire State*, 317).
41. Rothenberg, "The Invention of American Capitalism," 93.

42. Ibid., 100.
43. Most of the following story about Slater is adapted from Paul E. Rivard, *Samuel Slater: Father of American Manufactures* (Pawtucket, RI: Slater Mill Historic Site, 1974; repr. 1988).
44. He apparently read that a Philadelphia mechanic had been given a sizable bounty for devising a carding machine (Jeremy, *Transatlantic Industrial Revolution*, 79).
45. Meanwhile, Britain was forcing the emigration of convicts to Australia as a way of relieving the pressure of population driven off the land by enclosures. Before 1776, the American colonies had been used for this purpose.
46. Burrows and Wallace, *Gotham*, 306.
47. Gordon, *Business of America*, 15–16; Harlick, *No Place Distant*, 48–51.
48. Burrows and Wallace, *Gotham*, 307–10.
49. Various entrepreneurs who had profited from the shipping trade after the Revolution reinvested much of their money in enterprises that served the local and domestic markets; for one perspective related to Boston, see Lisa B. Lubow, "From Carpenter to Capitalist: The Business of Building in Postrevolutionary Boston," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997), 197.
50. Some details of Slater's start-up are provided in Jeremy, *Transatlantic Industrial Revolution*, 79–91.
51. Gordon and Malone, *Texture of Industry*, 348.
52. The mill was small by later standards, being 47 feet by 29 feet and 2½ storeys high.
53. In 1833, President Andrew Jackson visited Slater at Pawtucket and formally honored him as the "father of American manufactures (Gordon, *Business of America*, 17).
54. Beatty, *Colossus*, 65.
55. The invention of the cotton gin in 1793 and its quick, wide diffusion sparked a huge growth in Southern cotton production, unfortunately reviving the use of slavery. See Thomas Dublin and United States National Park Service, *Lowell: The Story of an Industrial City — A Guide to Lowell National Historical Park and Lowell Heritage State Park, Lowell, Massachusetts* (Washington, DC: Department of the Interior, 1992), 20; and Chandler Jr., Visible Hand, 57.
56. Even in 1880, the Blackstone was considered the most intensively used river in the region (Gordon and Malone, *Texture of Industry*, 62–3).
57. Johnson, *History of the American People*, 396.
58. Chandler Jr., *Visible Hand*, 57–8.
59. Holbrook, *Old Post Road*, 202.
60. Lowell was appalled by the dirty and unhealthy conditions of English mill towns. More attractive were the Scottish planned villages, of which there were a relatively large number by 1810, though mostly concerned with agriculture and fishing; see Dalzell, *Enterprising Elite*, 12, 20.
61. Benjamin W. Labaree, "The Making of an Empire: Boston and Essex County, 1790–1850," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997), 352. Lowell and Appleton were involved in a variety of ventures, including the export of potash, land speculation in Maine, and Boston land development. See Rothenberg, "The Invention of American Capitalism," 97; see also Jeremy, *Transatlantic Industrial Revolution*, 93–6. In

1858, Appleton wrote a memoir entitled *Introduction of the Power Loom and Origin of Lowell*; see Weible and Lowell Historical Society, *Continuing Revolution*, 1, who note that others in New England were also developing power looms at the same time, some of which incorporated better technology.

62. Susan Rosegrant and David Lampe, *Route 128: Lessons from Boston's High-Tech Community* (New York: Basic Books, 1992), 41.
63. Dalzell, *Enterprising Elite*, 27.
64. A power loom had been invented as early as 1785, but it took until the early 1800s before a truly workable machine was in operation. Its inventor, Edmund Cartwright, had received a £10,000 bounty from the British Parliament in 1809, which Lowell could not have missed when he visited the next year (ibid., 5). Moody began his career as a weaver and was later trained in machinery by Jacob Perkins, the most noted mechanic of his time.
65. Beatty, *Colossus*, 69.
66. The concept of limited liability was not a feature of incorporation in the companies owned by these men until 1830 (Dalzell, *Enterprising Elite*, 49). Instead, the aim of the incorporation was more to provide for the long-term existence of the operation and the integrity of the capital investment. The incorporation petition also spoke to a larger public purpose: to "secure the establishment of manufactures upon a more permanent foundation than has hitherto been found practicable in this commonwealth," this last perhaps referring to the unhappy textile experience of the Cabots in Beverly a generation earlier (28). The name of the company and its proposed product are reminiscent of the New York City company that employed Samuel Slater briefly in 1790.
67. Weible and Lowell Historical Society, *Continuing Revolution*, 42.
68. Ibid., 48
69. Wills, *Henry Adams and the Making of America*, 223–44, 350–6.
70. Weible and Lowell Historical Society, *Continuing Revolution*, 40.
71. Some of the basic technicalities of Lowell's and Moody's designs are described in Jeremy, *Transatlantic Industrial Revolution*, 99–101.
72. Dublin and United States National Park Service, *Lowell*, 40. See also David Freeman Hawke, *Nuts and Bolts of the Past: A History of American Technology, 1776–1860* (New York: Harper & Row, 1988), 91–3.
73. Dublin and United States National Park Service, *Lowell*, 33.
74. While American producers considered only the domestic market, by 1814 British producers exported four yards of cloth for every three consumed at home (Hobsbawm, *Age of Revolution*, 35).
75. One estimate of the capitalization of Rhode Island spinning mills was but a tenth of this; see Weible and Lowell Historical Society, *Continuing Revolution*, 42. The willingness of Boston merchants to invest in manufacturing on this scale seems to have been unique in America at this time (54).
76. Dalzell, *Enterprising Elite*, 27. The cash was collected from the investors in installments, as the money was needed.
77. Ibid.
78. "The curve of this change [toward support for industry] could be traced in the permutations of Daniel Webster's views on the tariff, as his thunderous briefs for the merchant and free trade began to hesitate and quaver, till they gave way to equally

thunderous briefs for the mill owner and protection" (Schlesinger Jr., *Age of Jackson*, 144; see also Weible and Lowell Historical Society, *Continuing Revolution*, 2; and Chandler Jr, *Visible Hand*, 58). Tariffs on imported goods traditionally had been the US government's means of financing itself, but with the nascent industrialization prompted by the embargo and the War of 1812, the protectionist aspect of the tariff began to gain in importance.

79. Some of the Associates must have had severe conflicts of interest. As shippers and importers, they would have opposed tariffs, but, as manufacturers, they would have favored them. The commercial leaders not involved in manufacturing expressed their unhappiness in a 1820 *Report of the Committee of Merchants and Others, of the Tariff*, which must have been produced for the debate over the proposed new tariff; see Dalzell, *Enterprising Elite*, 41. As late as 1833, one commentator claimed that, had the tariff been eliminated, three-quarters of the production in New England would have been curtailed and half the industrial sector would have been bankrupted (101–2). This is probably an exaggeration.
80. Ibid. There is disagreement over which country's workforce was the most productive in the years before the Civil War. Peter Temin ("The Industrialization of New England, 1830–1880," in *Engines of Enterprise: An Economic History of New England*, ed. Peter Temin [Cambridge, MA: Harvard University Press, 2000], 126) argues that Americans were twice as productive as British workers. This would justify the continuing wage disparities, but implies that the tariff, as long as it protected low-cost American production, was really aimed at low-wage Indian cloth producers.
81. Dalzell, *Enterprising Elite*, 113.
82. Chandler Jr, *Visible Hand*, 58. Women were not used intensively on New England farms, so they could be spared to go to the mills and add to the family income — or at least not put pressure on it (Dalzell, *Enterprising Elite*, 115).
83. Beatty, *Colossus*, 69. The boardinghouses were leased to matrons who, in turn, charged the women a fixed price for room and board (Dalzell, *Enterprising Elite*, 33).
84. In 1850, there were ten thousand workers in the Lowell mills: in 1845 the average size of Boston manufacturing firms was eight workers; see Ronald J. Zboray and Mary Saracino Zboray, "The Boston Book Trades, 1789–1850: A Statistical and Geographical Analysis," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997), 218n11. The sheer scale attracted many visitors, including Andrew Jackson and Charles Dickens.
85. The machine shop was later relocated to Lowell; Moody went with it as its head (Weible and Lowell Historical Society, *Continuing Revolution*, 141).
86. Their wages tended to be higher than prevailing rates to make sure they attracted the "best sort" of workers. Waltham soon had an employment waiting list (Dalzell, *Enterprising Elite*, 32–3). Wages were also as much as 84 percent higher than those for equivalent British workers (101–2).
87. Weible and Lowell Historical Society, *Continuing Revolution*, 17.
88. The economics of the trade-off between power costs and labor costs of the time are noted in Isaac Cohen, *American Management and British Labor: A Comparative Study of the Cotton Spinning Industry* (New York: Greenwood Press, 1990), 48–9.
89. Dalzell, *Enterprising Elite*, 30.

90. Sales grew from $3,000 in 1815 to $34,000 in 1817 and $345,000 in 1822; see Richard D. Brown, *Massachusetts: A Bicentennial History* (New York: Norton, 1978), 137.
91. The canal went through property that had been deeded to the Permacook Indians in 1655, when the town of Chelmsford was created by the Massachusetts colony. The Indians sold it to the town in 1685, following King Philip's War. It later became the town of East Chelmsford and, a century later, Lowell. See Weible and Lowell Historical Society, *Continuing Revolution*, 4.
92. The company had been incorporated in 1792 (ibid., 11). Apparently, the first canal built in New England was the South Hadley and Montague Canal just north of Springfield, Massachusetts, on the Connecticut River, opened in 1792; see Charles Frederick Carter, *When Railroads Were New* (New York: Simmons-Boardman, 1926), 5.
93. Wright and Viens, *Entrepreneurs*, 352.
94. Dublin and United States National Park Service, *Lowell*, 18.
95. Funded privately, it was supported by many who would be political leaders of Massachusetts in the next decades. In 1808 Secretary of the Treasury Albert Gallatin said it was "the greatest work of its kind which has ever been completed in the United States." Although its profitability was affected by the embargo and the War of 1812, it did pay dividends from 1819 until 1843. It closed in 1852, superseded by the railroads. See Weible and Lowell Historical Society, *Continuing Revolution*, 12–13; see also Struik, *Yankee Science in the Making*, 159–62.
96. It seemed never to have paid for itself until activity picked up at the falls in 1818. The promoters of the Erie Canal were often reminded of this fact; see Berstein, *Wedding of the Waters*, 131. Even after the construction of the mills in Lowell, the canal was used mainly to haul raw materials to them, while finished goods were sent back by wagon; see Stephen Salsbury, *The State, the Investor, and the Railroad: The Boston and Albany, 1825–1867* (Cambridge, MA: Harvard University Press, 1967), 41; see also Dalzell, *Enterprising Elite*, 84.
97. The farms in the area were not particularly fertile; through the eighteenth and nineteenth centuries, families left them for better land north and west, a typical scene in what was becoming overcrowded New England (Weible and Lowell Historical Society, *Continuing Revolution*, 5).
98. Ibid., 11.
99. Beatty, *Colossus*, 70–1. Half of the fourteen early shareholders were not on the list of the Boston Manufacturing Company; two were other Appletons and one was Daniel Webster. Later, all the shareholders in the Boston Manufacturing Company were allowed to purchase shares, and twenty-seven exercised this option (Weible and Lowell Historical Society, *Continuing Revolution*, 43).
100. Although the mills were incorporated separately and shareholders in each mill differed somewhat, they were largely the same and the mills functioned as a unit. The Merrimack mill (1823) was followed by the Hamilton (1826), the Appleton (1828), the Lowell (1829), the Middlesex (1831), the Suffolk and Tremont (1832), the Lawrence (1833), the Boott (1836), and the Massachusetts (1840); see Dublin and United States National Park Service, Lowell, 39.
101. Weible and Lowell Historical Society, *Continuing Revolution*, 138.
102. He was connected to the Boott Scottish trading family resident in Boston (Brown, *Massachusetts*, 138).

103. The standard mill was four storeys high, 150 feet long by 40 feet wide, and contained about 6,000 spindles; see Temin, "Industrialization of New England, 134.
104. Dublin and United States National Park Service, *Lowell*, 39.
105. Dalzell, *Enterprising Elite*, 47.
106. Weible and Lowell Historical Society, *Continuing Revolution*, 43–4; Dalzell, *Enterprising Elite*, 49.
107. Weible and Lowell Historical Society, *Continuing Revolution*, 143.
108. Dalzell, *Enterprising Elite*, 57. The Boston merchants, Amos and Abbott Lawrence, named the site after their family.
109. Struik, *Yankee Science in the Making*, 321–2; Hawke, *Nuts and Bolts of the Past*, 93, 196–8.
110. Most of the machinery in American mills was built of wood, partly because of its cheapness as a material and because it could be formed easily. Metal was used for fittings because of its strength and resistance to wear. The use of metal turbines in the 1840s was the beginning of the shift to metal machines. Metal allowed for steam power as well; see Brooke Hindle, *America's Wooden Age: Aspects of Its Early Technology* (Tarrytown, NY: Sleepy Hollow Restorations, 1975), 38–9, 184–6.
111. Dublin and United States National Park Service, *Lowell*, 36,81. The Lowell Machine Shop was incorporated in 1845.
112. Weible and Lowell Historical Society, *Continuing Revolution*, 175. Manchester, New Hampshire, was created later, in the 1850s. The company that had mills at Lawrence successfully approached the Massachusetts legislature to amend its charter to allow it to own property in New Hampshire; see Theodore Steinberg, *Nature Incorporated: Industrialization of the Waters of New England* (New York: Cambridge University Press, 1991), 108.
113. Rothenberg, "The Invention of American Capitalism," 99–100. By 1889, the water control system had been taken apart as the downstream companies abandoned waterpower and the dams were sold to electricity producers (Steinberg, *Nature Incorporated*, 269).
114. The interlocking nature of the Boston Associates can be seen in a study of a similar structure that ran the mills at Fall River, Massachusetts (Cohen, *American Management and British Labor*, 122–5).
115. Weible and Lowell Historical Society, *Continuing Revolution*, 44; Dalzell, *Enterprising Elite*, 49.
116. Hobson, *Remembering America*, 123, table 4.7. Technology improvements led to price declines between 1820 and 1860 to one-quarter that of early production (Jeremy, *Transatlantic Industrial Revolution*, 105).
117. The shareholders at Waltham, the earliest and least productive mill, got their investment back in dividends in seven years (Chandler Jr, *Visible Hand*, 59).
118. Nathan Appleton gave his children a number of shares in the companies over his lifetime and even gave four shares to his son-in-law, the poet Henry Wadsworth Longfellow (Weible and Lowell Historical Society, *Continuing Revolution*, 52).
119. Chandler Jr, *Visible Hand*, 60.
120. Dalzell, *Enterprising Elite*, 47.
121. Chandler Jr, *Visible Hand*, 65.

122. For a very good picture of Lowell society in the 1830s, see Lawrence A. Cremin, *American Education: The National Experience, 1783–1876* (New York: Harper and Row, 1980), 415–25.
123. Johnson, *History of the American People*, 396.
124. Weible and Lowell Historical Society, *Continuing Revolution*, 143. It reminds me of my home town of Flint, Michigan, in the 1950s, when it was said that 50,000 of its 150,000 people worked for General Motors.
125. Ibid., 149.
126. Ibid., 237.
127. Fall River passed Lowell by 1890 as the largest center for textile manufacturing, with 19,000 employees; see Dublin and United States National Park Service, *Lowell*, 65. By 1909, more people were employed in making clothes, not cloth, in Manhattan alone than were engaged in the mills and plants of Massachusetts (Von Drehle, *Triangle*, 15–16). For an interesting study of the evolution of the town itself up to the late 1930s, see Margaret Terrell Parker, *Lowell: A Study of Industrial Development* (Port Washington, NY: Kennikat Press, 1940).
128. Landes, *Wealth and Poverty of Nations*, 301.
129. Albro Martin, *Railroads Triumphant: The Growth, Rejection, and Rebirth of a Vital American Force* (New York: Oxford University Press, 1992), 306.
130. One of these, the *Patrick,* ran on the line when it opened in 1835. By 1838, the machine shop at Lowell had built and sold thirty-two locomotives, eight of them for the Western Railroad, pushing through the Berkshires to Albany, New York (Weible and Lowell Historical Society, *Continuing Revolution*, 149; see also Salsbury, *State, the Investor, and the Railroad*, 175).
131. Another view of this process sees the investment in the mills as a way to preserve family fortunes and status through "sure things" such as cloth production, not as budding capitalism (Weible and Lowell Historical Society, *Continuing Revolution*, 63). This may have been true after 1830, when the industry was established, but does not explain either the start of the textile manufacturing business or the subsequent rise of Boston as a venture capital center for railroads and other manufacturing in the 1840s and after.
132. Rothenberg, "The Invention of American Capitalism," 98.
133. Weible, *World of the Industrial Revolution*, 51.
134. One student of the period notes that the completion of the Erie Canal allowed factories to follow the frontier, and a number of relatively small (40-200 employees) textile plants did appear in the late 1820s along the falls of water from streams that came down from the plateau south of the canal (Berstein, *Wedding of the Waters*, 358). In 1831, the average mill near the Erie Canal employed forty-nine people (Klein, *Empire State*, 317). Yankee migration into the area probably brought technical expertise and financial connections. Most of these small mills were driven out of business by the big New England mills.
135. Chandler Jr, *Visible Hand*, 60. One New England advantage that was negated by the railroads was that of cheap sea transport. As long as population was concentrated along the coast, the major markets were easily accessible. The railroads not only opened up the West for settlement; they also equalized locational advantages with respect to this population shift (Weible and Lowell Historical Society, *Continuing Revolution*, 8–9).
136. Dublin and United States National Park Service, *Lowell*, 65.

137. Weible and Lowell Historical Society, *Continuing Revolution*, 50; and Dalzell, *Enterprising Elite*, 55. Even so, a Lowell mill became the first in the world to figure out how to produce carpets on a power loom in 1842. As well, in 1846, the first turbines were installed in place of breastwheels to improve the power efficiency gained from falling water (Weible and Lowell Historical Society, *Continuing Revolution*, 142).
138. In 1860, New York City produced 40 percent of the country's clothing, and 35 percent of its manufacturing employment was in the clothing trades (Burrows and Wallace, *Gotham*, 310).
139. The use of electricity rather than waterpower or steam, when combined with air conditioning, was a centerpiece of Southern attractiveness. The new sites could be designed from the ground up, as opposed to expensive reconstruction in the North (Gordon and Malone, *Texture of Industry*, 318).
140. Frederick Turner, *Spirit of Place: The Making of an American Literary Landscape* (San Francisco: Sierra Club Books, 1989), 64–5.
141. David Lampe, *The Massachusetts Miracle: High Technology and Economic Revitalization* (Cambridge, MA: MIT Press, 1988), 277.
142. Weible and Lowell Historical Society, *Continuing Revolution*, 283–316.
143. In Britain, the ratio was about even, not counting child labor (Jeremy, *Transatlantic Industrial Revolution*, 105).
144. At one point in the growth of Lowell, the Lowell Savings Bank reported that 978 of the women employed had deposited $100,000 of their savings (Dalzell, *Enterprising Elite*, 46).
145. Dublin and United States National Park Service, *Lowell*, 56.
146. Lee, *Yankees of Connecticut*, 237.
147. Weible and Lowell Historical Society, *Continuing Revolution*, 236–7. The second generation of French-Canadians was not so enthusiastic about mill work (Ashton and Hudson, *Industrial Revolution*, 136–7, 142).
148. Dublin and United States National Park Service, *Lowell*, 67. Jack Kerouac's French-Canadian parents were latecomers to Lowell, arriving in the early 1900s. His father was a printer and businessman, not a millhand.
149. Mill towns such as Lowell converted "prefactory" immigrants into city people with industrial discipline and attitudes from the 1840s through to the Depression, nearly a century later; see R. Douglas Hurt, *The Ohio Frontier: Crucible of the Old Northwest, 1720–1830* (Bloomington: Indiana University Press, 1996), 55.

Chapter 6

1. Struik, *Yankee Science in the Making*, 25.
2. Quoted in Paul Freiberger and Michael Swaine, *Fire in the Valley: The Making of the Personal Computer*, 2nd ed. (New York: McGraw-Hill, 2000), 3

3. Quoted in Smithsonian Institution, National Museum of American History, "Lighting a Revolution — Lamp Inventors 1880–1940: G.E.M. Lamps" (Washington, DC, 2013); available online at http://americanhistory.si.edu/lighting/bios/whitney.htm.
4. Quoted in James S. Huggins, "James S. Huggins' Refrigerator Door"; available online at http://www.jamesshuggins.com/h/quo1/quotations_general.htm#hopper.
5. See Eastern Roads, "Yankee Division Highway: Historic Overview"; available online at http://www.bostonroads.com/roads/MA-128/.
6. Yanni Kosta Tsipis and David Kruh, *Building Route 128* (Charleston, SC: Arcadia, 2003), 7. The choice of the actual number was haphazard.
7. There was already a controversy at the national level over the creation of a southwestward-trending highway from Chicago to Los Angeles, eventually numbered US 66. It broke the grid and the grid numbering system.
8. Paul Sutter, "'A Retreat from Profit': Colonization, the Appalachian Trail, and the Social Roots of Benton MacKaye's Wilderness Advocacy," *Environmental History* 4 (4, 1999): 553–7; see also Patton, *Open Road*, 216.
9. Susan Rosegrant and David Lampe, *Route 128: Lessons from Boston's High-Tech Community* (New York: Basic Books, 1992), 107.
10. Tsipis and Kruh, *Building Route 128*, 8. In 1949, he noted: "This new highway will cause the relocation of business establishments and open new residential sections."
11. Rosegrant and Lampe, *Route 128*, 107.
12. Tsipis and Kruh, *Building Route 128*, 8.
13. The politicians cut the ribbon to open it in 1951. When the completed highway was opened (again), some parts already were seeing traffic numbers three times higher than the road had been designed for (ibid., 9).
14. See Mark Sardella, "The History of Route 128"; available online at http://marksardella.wordpress.com/2008/05/09/route-128/.
15. The basic story of the making of Route 128 can be found in a number of places; see, for example, Eastern Roads, "Yankee Division Highway: Historic Overview." at http://www.bostonroads.com/roads/MA-128
16. Tsipis and Kruh, *Building Route 128*, 116
17. By 1973, 186 new companies had established in Waltham (Rosegrant and Lampe, *Route 128*, 130).
18. Ibid., 108.
19. Michael T. Peddle, "Planned Industrial and Commercial Developments in the United States: A Review of the History, Literature, and Empirical Evidence Regarding Industrial Parks and Research Parks," *Economic Development Quarterly* 7 (1, 1993): 107–24.
20. Tsipis and Kruh, *Building Route 128*, 116.
21. Alan R. Earls, *Route 128 and the Birth of the Age of High Tech* (Charleston, SC: Arcadia, 2002), 7
22. Beatty, *Colossus*, 6. The concentration of nineteenth-century arms manufacturers in the Connecticut River valley was an earlier example of this phenomenon.
23. Eastern Roads, "Yankee Division Highway: Historic Overview."
24. Rosegrant and Lampe, *Route 128*, 130.
25. Sardella, "History of Route 128."
26. Rosegrant and Lampe, *Route 128*, 130.
27. Ibid., 109–10.

28. Patton, *Open Road*, 212–13.
29. United Nations Educational, Scientific and Cultural Organization, "Science Policy and Capacity-Building: Science Parks around the World" (Paris: UNESCO, n.d.); available online at http://www.unesco.org/new/en/natural-sciences/science-technology/university-industry-partnerships/science-parks-around-the-world/.
30. As early as 1635, some Puritan settlers were experimenting with local alternatives to needed chemicals, such as gunpowder, which otherwise had to be ordered from Europe (Oliver, *History of American Technology*, 64–6).
31. Rosegrant and Lampe, *Route 128*, 37.
32. Weible and Lowell Historical Society, *Continuing Revolution*, 160.
33. Ibid., 185.
34. Ibid., 162.
35. Nathan Rosenberg and L.E. Birdzell, *How the West Grew Rich: The Economic Transformation of the Industrial World* (New York: Basic Books, 1986), 252–3.
36. Weible and Lowell Historical Society, *Continuing Revolution*, 147.
37. Andrew Carnegie has been credited as the first to introduce science to production by employing chemists in his steel plants (see, for example, Johnson, *History of the American People*, 563), but this was decades after Francis and Roswell in Lowell and Springfield.
38. Massachusetts tried early on to include some mechanical instruction in its education system, which attracted the interest of New York educators. Then New York was given an endowment for the creation of the Rensselaer Institute in Troy (the Yankee town in the Albany area) in 1825, its mission being to instruct in "the application of science to the common purposes in life" (Fox and Remini, *Decline of Aristocracy*, 323; see also Bruce Mazlish, *The Railroad and the Space Program; An Exploration in Historical Analogy* [Cambridge, MA: MIT Press, 1965], 64). Renssalaer was the only school besides West Point at the time to offer engineering training. Harvard began to offer engineering in 1847, with an endowment from Amos Lawrence. Railroad construction apparently spurred this interest in early engineering education (Mazlish, *Railroad and the Space Program*, 169–70). Other donors followed suit at Yale, Dartmouth, and in Brooklyn, New York (Oliver, *History of American Technology*, 244).
39. Struik, *Yankee Science in the Making*, 442–3.
40. In 1847, another Yankee, Professor Jonathan B. Turner, one of the founders of the University of Illinois, had proposed that a system of such colleges be set up on the basis of an equal grant for each state. Morrill, in contrast, favored allocating public lands to each state based on the number of its congressional representatives, a method that favored eastern states at the time. For the aims of this act, see Rosegrant and Lampe, *Route 128*, 32–3; and for more on Turner and Morrill, see 35–6.
41. Ibid., 32–3.
42. John D. Pulliam and James J. Van Patten, *A History of Education in America* (Upper Saddle River, NJ: Merrill Prentice Hall, 2003), 139.
43. Rosegrant and Lampe, *Route 128*, 36.
44. The term "scientist" was first used by a Cambridge don in 1833 to distinguish those interested in the material world from those more concerned with things spiritual and artistic; see Doron Swade and Charles Babbage, *The Difference Engine: Charles Babbage and the Quest to Build the First Computer* (New York: Viking, 2001), 24.

45. Palmer C. Ricketts described Rennselaer as "the first school of science and school of civil engineering, which has had a continuous existence, to be established in any English-speaking country"; see the Rennselaer website at http://www.rpi.edu/about/history.html.
46. Rosegrant and Lampe, *Route 128*, 50.
47. Ibid., 50–1. Whitney is regarded as one of the fathers of industrial research.
48. Even automobile manufacturers became involved; see, for instance, Alfred P. Sloan, John McDonald, and Catharine Stevens, *My Years with General Motors* (New York: Doubleday/Currency, 1990), 248–51, 259, 262.
49. Rosegrant and Lampe, *Route 128*, 51.
50. Landes, *Wealth and Poverty of Nations*, 201, 283–4.
51. Rosenbloom, "Challenges of Economic Maturity," 169–71.
52. Ibid., 171.
53. Chandler Jr, *Visible Hand*, 40.
54. Rosegrant and Lampe, *Route 128*, 38.
55. Hobsbawn, *Age of Capital*, 57–8.
56. Support was not all driven by military needs. For example, the National Institutes of Health, the Bureau of Mines, and the Bureau of Standards grew out of other concerns, as did the Smithsonian Institute; see Rosenberg and Birdzell, *How the West Grew Rich*, 253; and Rosegrant and Lampe, *Route 128*, 54.
57. Rosegrant and Lampe, *Route 128*, 75–85.
58. He had developed an electric calculating machine to solve differential equations.
59. Lynn Elaine Brown and Steven Sass, "The Transition from a Mill-Based to a Knowledge-Based Economy: New England, 1940–2000," in *Engines of Enterprise: An Economic History of New England*, ed. Peter Temin (Cambridge, MA: Harvard University Press, 2000), 210.
60. We would know it today as a four-function calculator; see Swade and Babbage, *Difference Engine*, 98.
61. A good survey of Babbage and his contemporaries is Swade and Babbage, *Difference Engine*. In his time, a computer was not a machine but a person who worked out numerical tables and calculations, much like we would refer today to a programmer, meaning someone who writes programs to operate computers.
62. Ibid., 11–17, 27–9.
63. Ibid., 67. Although Swade dismisses the question of precision in terms of parts technology in the 1830s, he notes that the cost of producing a large quantity of identical parts added to the time needed for construction and therefore the cost.
64. Ibid., chap. 10. When his father attempted to promote orders for the machine, he found no takers. In 1859, a Scheutz machine was built in Britain and used to help calculate actuarial tables, but only did 28 of 600 pages of numbers.
65. See ibid., part 3, for an account of the construction of the modern machine at the Science Museum in London. The 1942 Mark I was the first such analytical engine, but it came seventy years after Babbage died and used different technology than was available to him (Rowland, *Spirit of the Web*, 237).
66. A lot of mythology seems to be attached to Ada, if only because of her parentage. One of the early computer programming languages was named Ada. The relationship between Babbage and Ada Lovelace is described in Swade and Babbage, *Difference Engine*, chap. 8. Dr. Grace Hopper, who was the oldest serving member of the US Navy when she

retired as a rear admiral in 1986, just shy of her eightieth birthday, was Ada Lovelace's logical successor, having been the chief developer of the first robust computer language, COBOL.

67. Babbage used punched cards in his engines, copied from the Jacquard textile loom.
68. When this design was taken over by IBM, the machine, called the Automatic Sequence calculator, used punched tape rather than cards; see Rowland, *Spirit of the Web*, 237.
69. The movement from analog, where the machine uses continuous physical phenomena (like a steering wheel on a car) to solve a problem, to digital, where everything is reduced to numbers and solved that way, was a momentous step. It led to the standard adoption of the base 2 numerical system as the bedrock of the computing age instead of the base 10 used by most human minds. Today, if it is digital, it works off a numerical system unknown to most people.
70. ENIAC, built in 1945, cost $800,000, contained 17,500 tubes, required a dedicated power line, occupied 1,800 square feet of space, weighed 30 tons, and its front panel was 100 feet long; it could perform all of 37 calculations in a second (Rowland, *Spirit of the Web*, 237). A controversy has developed in which one side claims that John Atanasoff, a professor at the University of Iowa, invented the first digital computer. Like the automobile, there were many inventors, using a variety of technologies, one of which eventually becomes dominant (Lienhard, *Inventing Modern*, 255; Van Dulken, *Inventing the 20th Century*, 110).
71. Rowland, *Spirit of the Web*, 245. By 1953, the SAGE weighed 250 tons, but could track as many as 48 targets at a time; the system remained in service until 1984.
72. Lampe, *Massachusetts Miracle*, 240–3. Employment was small at first; DEC, for instance, employed about 5,000 people in 1970 and 10,000 in 1974. But by 1984 it employed 25,000 in Massachusetts alone. See Brown and Sass, "Transition," 213.
73. Once the marvel of the age, the last Polariod instant film was produced at the end of 2008, a victim of digital photography.
74. Raytheon developed the microwave oven in 1945 as a spinoff of its military-sponsored radiation lab; see Earls, *Route 128 and the Birth of the Age of High Tech*, 38.
75. Apparently Compton had had an idea like this before the war put it on hold (Rosegrant and Lampe, *Route 128*, 111.
76. Beatty, *Colossus*, 6.
77. Paul Gompers and Joshua Lerner, eds., *The Venture Capital Cycle*, 2nd ed. (Cambridge, MA: MIT Press, 2004), 4. It had trouble raising its first $3 million tranche in 1946, as well (Rosegrant and Lampe, *Route 128*, 111).
78. Rosegrant and Lampe, *Route 128*, 119. By the 1960s, the bank had accounts with 85 percent of the Route 128 tech companies (120).
79. It folded in the mid-1960s, and it would be a while before others sprang up (ibid., 114); by the 1980s, Silicon Valley was attracting the lion's share of venture capital money (126–7).
80. Ibid., 121–2.
81. In all, ADRC had 1,200 investors over its autonomous life (ibid., 111).
82. Earls, *Route 128 and the Birth of the Age of High Tech*, 7–8.
83. Ibid., 87.

84. See Ross DeVol and Anita Charuwon, *California's Position in Technology and Science: A Comparative Benchmarking and Assessment* (Santa Monica, CA: Milken Institute, 2008); Lampe, *Massachusetts Miracle*, 243; and Rosegrant and Lampe, *Route 128*, 13.
85. Brown and Sass, "Transition," 232.
86. Herman Hollerith had the idea of adapting punch cards to a machine-readable format that could be programmed to analyze data, such as that on census forms. Punch cards had been in use by textile mills to "program" their production for calculations and arithmetical functions for decades. Babbage and Lovelace also had the same idea. Hollerith received his PhD for a dissertation on the subject in 1889 and then succeeded in using his cards and machines to sort data from the 1890 census returns. As late as the mid-1960s, as a graduate student, I used a "counter-sorter" with punch cards for the data in my master's thesis.
87. Flint began with a New York shipper, became a US consul in Chile, got into banking and selling warships to developing countries, and then became a "disinterested intermediary" in putting together trusts; see Sean Dennis Cashman, *America in the Gilded Age: From the Death of Lincoln to the Rise of Theodore Roosevelt* (New York: New York University Press, 1984), 57–8.
88. Grace Hopper's team on the early Mark I found a moth that had short-circuited part of the computer, the legendary first "bug," a picture of which is in Earls, *Route 128*, 43.
89. Rowland, *Spirit of the Web*, 246, 278.
90. When Bell applied for a patent, its lawyers found that a scientist living in Canada had patented a similar device in 1930, but nothing had come of it. The Bell device was different enough that the company was able to get around the patent.
91. They all got the Nobel Prize for their effort. It is important to recognize, however, that "invention" is never a lone process, but normally consists of the useful model of something that has been thought about by others in the past. The word "utility" is crucial to what we see as "invention"; see Diamond, *Guns, Germs, and Steel*, 244–5.
92. Raytheon claims to be the first commercial producer of transistors, applying them to hearing aids as early as 1947 (Earls, *Route 128 and the Birth of the Age of High Tech*, 8, 40–1).
93. Rowland, *Spirit of the Web*, 266.
94. See Lampe, *Massachusetts Miracle*, 265; and Rowland, *Spirit of the Web*, 266.
95. In 1971, Ted Hoff at Intel developed the microprocessor, a programmable chip that allows the variety of uses that a computer user might want to have performed without redesigning the circuitry. Five years later, the microprocessor was at the heart of the fledgling personal computer.
96. In 1968, Intel's chips held 1,024 bits of data, and in 1991, 1,024,000 bits, while the chips were sold at roughly the same price, unadjusted for inflation; see Robert X. Cringley, *Accidental Empires: How the Boys of Silicon Valley Make Their Millions, Battle Foreign Competition, and Still Can't Get a Date* (New York: Harper, 1996), 41.
97. Moore's Law does not have any intrinsic driving force, but it has been an uncanny predictor of integrated circuit/ chip development, which, in turn, has led to increasingly sophisticated products and services, rendering earlier ones obsolete.
98. It had 4,100 integrated circuits, the most advanced instrumentation of its kind then (Earls, *Route 128 and the Birth of the Age of High Tech*, 65). Apollo 8 had a computer the size of a suitcase (Rowland, *Spirit of the Web*, 269).

99. An example is the daily newspaper industry, which has seen its margins eroded by mobile online readership, online want ads, alternative news sources, and constant "breaking" news. None of this was possible with the technology of a decade ago — the bottleneck being computing power.
100. Lampe, *Massachusetts Miracle*, 246.
101. Olsen was one of Jay Forrester's MIT Whirlwind group that developed the magnetic core memory. After he got his master's degree in 1952, he went to work on SAGE, and left in 1957 to found DEC (Rosegrant and Lampe, *Route 128*, 91).
102. Ibid., 5–6.
103. Lampe, *Massachusetts Miracle*, 247.
104. An Wang earned his PhD from Harvard in 1948 and went to work on computer development. He came up with a magnetic core memory about the same time as Jay Forrester at MIT. He set up Wang Laboratories in 1951 with $600 and a disputed patent on the magnetic core memory (Rosegrant and Lampe, *Route 128*, 92, 115–7).
105. Earls, *Route 128 and the Birth of the Age of High Tech*, 123.
106. The National Park was the first created east of the Mississippi in the twentieth century (Lampe, *Massachusetts Miracle*, 275).
107. Ibid., 275–9.
108. Earls, *Route 128 and the Birth of the Age of High Tech*, 105.
109. Rosegrant and Lampe, *Route 128*, 6.
110. Freiberger and Swaine, *Fire in the Valley*, 24–5, 27. DEC was not prepared to sell or provide customer support to individuals.
111. Ibid., 379–80.
112. Rosegrant and Lampe, *Route 128*, 116.
113. Ibid., 136–7.
114. Ibid., 171–84.
115. Rosenberg and Birdzell, *How the West Grew Rich*, 128.
116. Rowland, *Spirit of the Web*, 81–6.
117. Technology, including the types of products chosen to offer the market, is not value neutral. Neither is the segment of the market chosen. In traditional societies, television, McDonald's, and Wal-Mart are all subversive of leadership structures (ibid., 277–8).
118. The British followed a roughly similar path, though not to the extreme that the United States has done; see Landes, *Wealth and Poverty of Nations*, 222.

Chapter 7

1. Simon Schama, *Landscape and Memory* (Toronto: Vintage Books, 1996), 572.
2. Edmund Morris, *Theodore Rex* (New York: Modern Library, 2002), 487.
3. Aldo Leopold. *A Sand County Almanac* (1949; repr. New York: Ballantine Books, 1966), 157. The "forty freedoms" is a reference to President Harry Truman's postwar statement

about “Four Freedoms” that the world’s people ought to enjoy, which was issued about the time of Leopold’s book was originally published.

4. Henry David Thoreau, *Walden and Civil Disobedience* (1854; repr. New York: Penguin, 1980), 9. Walden is one of 1,100 lakes and ponds in Massachusetts. There is even another Walden Pond elsewhere in the State; see Maynard, *Walden Pond*, 4–5.
5. The area is probably more heavily wooded now than it has been for the past three hundred years.
6. Thoreau was not really a back-to-the-land type, but shared Ralph Waldo Emerson’s feeling that the railroad meant progress and utility. He found farming at Walden Pond to be distracting because it required so much time; see George H. Douglas, *All Aboard: The Railroad in American Life* (New York: Smithmark, 1996), 90. The railroad reached its terminus in Fitchburg in March 1845, just before Thoreau went to Walden Pond; see Alvin F. Harlow, *Steelways of New England* (New York: Creative Age Press, 1946), 238.
7. Maynard, *Walden Pond*, 160, 195.
8. Thoreau lived at Walden Pond from July 4,1845, to September 6, 1847. Friends helped him raise the house, and he apparently left because Emerson needed someone to look after his own house while he went on a European tour.
9. Maynard, *Walden Pond*, 192.
10. Ibid., 198. By the end of the century, wilderness was being ascribed to the city, not the country, in books such as Upton Sinclair’s *The Jungle*, about Chicago; see Nash, *Wilderness and the American Mind*, 143.
11. Thoreau, *Walden and Civil Disobedience*, 91. A bill was introduced in the State legislature that year to make the donation into a reservation, with the Middlesex County Council as trustees (Maynard, *Walden Pond*, 229).
12. Maynard, *Walden Pond*, 248.
13. Ibid., 256–60. Also, in 1958, Concord residents voted to establish a dump near the Pond.
14. Ibid., 307–16. Henley’s fund-raising for the Walden Woods Project secured sponsorship from a number of large corporations, leading critics to feel the site was being “saved” by the kind of institutions that it should stand against.
15. Thoreau, *Walden and Civil Disobedience*, 94–5.
16. Wallace Stegner and Page Stegner, *Marking the Sparrow’s Fall: The Making of the American West* (New York: Henry Holt, 1998), 148.
17. Thoreau, *Walden and Civil Disobedience*, 8.
18. Emerson felt he could “pace sixteen rods more accurately than another man can measure it by tape”; see Carlos Baker, *Emerson among the Eccentrics: A Group Portrait* (New York: Viking, 1996), 328.
19. Ibid., 327–8.
20. His aunt Maria wished he would “find something better to do than walking off every now and then” (Turner, *Spirit of Place*, 23).
21. Emerson saw him as “how near to the old monks in their ascetic religion!” (Baker, *Emerson among the Eccentrics*, 437).
22. Fred Setterberg, *The Roads Taken: Travels through America’s Literary Landscapes* (Athens: University of Georgia Press, 1993), 133–4. Thoreau was noted for his curt and blunt words, and liked “no” more than “yes” (Baker, *Emerson among the Eccentrics*, 100–4).

23. Johnson (*History of the American People*, 424–7) places Thoreau in the context of writers of his time.
24. Baker, *Emerson among the Eccentrics*, 263–4.
25. Maynard, *Walden Pond*, 25.
26. Ibid., 203.
27. Baker, *Emerson among the Eccentrics*, 265–6; Turner, *Spirit of Place*, 45.
28. Baker, *Emerson among the Eccentrics*, 270–1.
29. Maynard, *Walden Pond*, 8.
30. Thoreau had just read Charles Darwin's *On the Origin of Species*, and it moved him from writing travel-oriented material toward explaining and measuring natural phenomena; see Barbara Kingsolver, *High Tide in Tucson: Essays from Now or Never* (New York: HarperCollins, 1995), 238.
31. Turner, *Spirit of Place*, 39.
32. Emerson seemed to see the Walden Pond area as having some parallels to the English Lake district, home to the Romantic poets William Wordsworth and Samuel Taylor Coleridge (Maynard, *Walden Pond*, 29).
33. Ibid., 220.
34. Ibid., 67. He might also be considered the founder of the civil disobedience movement: while at Walden Pond, he spent a night in jail for refusing to pay his taxes because he opposed the was with Mexico. Abbey points out, however, that this movement goes back at least to the Boston Tea Party.
35. Ibid., 121.
36. Ibid., 254.
37. Ibid., 140; see also Nash, *Wilderness and the American Mind*, 101–6. Thoreau was not the first to suggest this prospect. Painter George Catlin, after traveling in the Dakotas in 1832, wrote that there should be a national park there to preserve the western wilderness: "[W]hat a beautiful and thrilling specimen for America to preserve and hold up to the view of her refined citizens and the world, in future ages! A *nation's park*" (101). In the 1980s, there was a proposal to reserve a large area of the Dakota grasslands as a "buffalo commons," reminiscent of Catlin's dream.
38. Schama, *Landscape and Memory*, 578.
39. Nash, *Wilderness and the American Mind*, 89.
40. Stegner and Stegner, *Marking the Sparrow's Fall*, 125. He did go north, however, taking a railroad and boat excursion to Montreal and Quebec City in 1850.
41. Setterberg, *Roads Taken*, 137–8.
42. Nash, *Wilderness and the American Mind*, 84.
43. Bernard-Henri Levy (*American Vertigo: Traveling in the Footsteps of Tocqueville* [New York: Random House, 2006], 173) notes that this is one of the most enigmatic aspects of Americans.
44. Stegner and Stegner, *Marking the Sparrow's Fall*, 122–5; Nash, *Wilderness and the American Mind*, xi–xiv, 24.
45. One can see this in Thoreau's imitation of the Romanticist Wordsworth in his long walks, his regard for nature, poetry writing, and solitude.
46. Roderick Nash relates European Romanticism to American ideas in *Wilderness and the American Mind*, 47–55. The Indians themselves were baffled by the idea of wilderness. Sioux chief Standing Bear commented: "We did not think of the great open plains, the

beautiful rolling hills, and the winding streams as 'wild'." Only to the white man was nature a "wilderness" (xiv).

47. Slotkin, *Regeneration through Violence*, 518–9.
48. There is an alternate possibility, that Cooper modeled Natty after a Connecticut squatter, David Shipman, whose cabin stood by a lake on a property that Cooper's father William came to look over; indeed, Cooper retrospectively acknowledged Shipman (Taylor. *William Cooper's Town*, 63).
49. Some of Cooper's political views are reflected in his novels. See Schlesinger Jr., *Age of Jackson*, 375–80; and Holbrook, *Old Post Road*, 228.
50. Klein, *Empire State*, 353–4.
51. Mark Twain, writing seventy years after the Leatherstocking Tales, was scathing in his criticism of Cooper's style. Even Cooper's later defenders acknowledged his stylistic deficiencies, but he did give us the stock characters of the frontier myth; see John Foreman, *Frommer's Comprehensive Travel Guide to New York State* (New York: Prentice-Hall Travel, 1994), 272.
52. Quoted in Edward Abbey, *Desert Solitaire: A Season in the Wilderness* (New York: McGraw-Hill, 1968), 167–8.
53. Cooper's romanticism played an important role in American myth development; see Johnson, *History of the American People*, 412–3; Nash, *Wilderness and the American Mind*, 75–7; Richard Slotkin, *Gunfighter Nation: The Myth of the Frontier in Twentieth-Century America* (Norman: University of Oklahoma Press, 1998), 15–16; idem, *Regeneration through Violence*, 230, 286, 294, 310, 467–8, 512; Stegner and Stegner, *Marking the Sparrow's Fall*, 123, 199–202; and Taylor. *William Cooper's Town*, 412.
54. Maynard, *Walden Pond*, 29.
55. Nash, *Wilderness and the American Mind*, 86–7.
56. To the thinker, once the process of exploitation and reduction had pushed the frontier, especially the forested frontier, back from the coast, wilderness became something to be protected. The prospect of an America without wilderness was, in its way, un-American. For me, living in a Canada that is mostly still wilderness puts a rather different "spin" on this idea.
57. Most of the biographical details that follow are from Witold Rybczynski, *A Clearing in the Distance: Frederick Law Olmstead and America in the Nineteenth Century* (New York: Scribner, 1999); and Frederick Law Olmstead, *Civilizing American Cities: Writings on City Landscapes*, ed. S.B. Sutton (New York: Da Capo Press, 1997).
58. Rybczynski, *City Life*, 125.
59. Olmstead, *Civilizing American Cities*, 4–5. For his writings on the South, see idem, *The Cotton Kingdom: A Traveler's Observations on Cotton and Slavery in the American Slave States*, ed. Arthur M. Schlesinger (New York: Knopf, 1953).
60. Olmstead, *Civilizing American Cities*, 6–7, 9.
61. Rybczynski, *Clearing in the Distance*, 285–6.
62. Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in *Uncommon Ground: Rethinking the Human Place in Nature*, ed. William Cronon (New York: W.W. Norton, 1997), 93.
63. Olmstead, *Civilizing American Cities*, 12.
64. Schlereth, *Victorian America*, 235.

65. Olmstead, *Civilizing American Cities*, 101–5. Olmstead had done some work for the Pinchot family. See also Spirn, "Constructing Nature," 99–101.
66. Spirn, "Constructing Nature," 91–3, 110–13.
67. Turner, *Rediscovering America*, 37–9.
68. Much of the biographical details on Muir are found in ibid., 29–40.
69. Ibid., 284–5.
70. Nash, *Wilderness and the American Mind*, 106.
71. He had previously visited Wordsworth in England; see Rebecca Solnit, *Wanderlust: A History of Walking* (New York: Penguin Books, 2001), 153.
72. Turner, *Rediscovering America*, 214.
73. Schama, *Landscape and Memory*, 573. Muir relates that he told Emerson, "you are a Sequoia yourself. Stop and get acquainted with your big brothers."
74. Nash, *Wilderness and the American Mind*, 160.
75. Turner, *Rediscovering America*, 292–3.
76. Nash, *Wilderness and the American Mind*, 132–3.
77. Turner, *Rediscovering America*, 330–1.
78. Char Miller, *Pioneers of Conservation: Gifford Pinchot and the Making of Modern Environmentalism* (Washington, DC: Island Press, 2001), 121.
79. Turner, *Rediscovering America*, 230–1.
80. Congress had passed a law reserving forest reserves in 1891 (Nash, *Wilderness and the American Mind*, 133).
81. Ibid., 122.
82. A ubiquitous sign on federal lands in the West today is "Land of Many Uses."
83. Miller, *Pioneers of Conservation*, 137–8.
84. Turner, *Rediscovering America*, 284–5, 293.
85. Nash, *Wilderness and the American Mind*, 129.
86. One author claims that Muir saw himself as a John the Baptist, leading Americans to immerse themselves in God's Nature (ibid.).
87. Miller, *Pioneers of Conservation*, 7.
88. Maynard, *Walden Pond*, 203.
89. Nash, *Wilderness and the American Mind*, 133.
90. Solnit, *Wanderlust*, 153.
91. Dave Foreman, *Confessions of an Eco-Warrior* (New York: Crown Trade Paperbacks, 1991), 200.
92. Stegner and Stegner, *Marking the Sparrow's Fall*, 125–6.
93. Miller, *Pioneers of Conservation*, 55.
94. Ibid., 57.
95. Ibid., 95. Prominent New Yorkers were concerned in the 1880s that deforestation in the Adirondacks and drought in the western part of the State would hamper trade with the West, and were pushing the idea of a State reserve north of the Hudson River. This led to the creation of the Adirondack Park in 1892 (Nash, *Wilderness and the American Mind*, 118–21).
96. Miller, *Pioneers of Conservation*, 103–4.
97. Marybeth Lorbiecki, *Aldo Leopold: A Fierce Green Fire* (Guilford, CT: Falcon, 2005), 24.
98. Miller, *Pioneers of Conservation*, 130–8.

99. Miller, *Pioneers of Conservation*, 169–70.
100. Ibid., 155.
101. One of the prime movers of this spate of organizing came as a result of a major Governors' Conference on the Conservation of Natural Resources, organized by Pinchot in 1908 and followed by a presidential conference in late 1909. See United States, Library of Congress, "American Memory: The Evolution of the Conservation Movement, 1850–1920" (Washington, DC); available online at http://memory.loc.gov/ammem/amrvhtml/cnchron5.html. See also Faragher, *Rereading Frederick Jackson Turner*, 211.
102. Miller, *Pioneers of Conservation*, 333.
103. Ibid., 374–6.
104. Firestation, "A Brief History of Leopold Desk Company" (Burlington, IA, n.d.); available online at http://burlingtonfirestation.com/leopold.htm.
105. Growing up in Michigan in the 1950s, we called a "davenport" what is known elsewhere as a "sofa" or a "chesterfield," reflecting the importance of furniture from another Mississippi River town, Davenport, Iowa.
106. Lorbiecki, *Aldo Leopold*, 65–6.
107. Ibid., 68.
108. Ibid., 90.
109. Ibid., 112.
110. Marshall was a plant physiologist working in the Wind River area of Wyoming, who in 1930 issued a ringing manifesto for the conservation of wilderness areas wherever they existed, not just on the Gila River (Stegner and Stegner, *Marking the Sparrow's Fall*, 132).
111. Lorbiecki, *Aldo Leopold*, 132.
112. Foreman, *Confessions of an Eco-Warrior*, 178.
113. Stegner and Stegner, *Marking the Sparrow's Fall*, 132.
114. Lorbiecki, *Aldo Leopold*, 182.
115. Nash, *Wilderness and the American Mind*, 272.
116. Ibid., 248. An interesting discussion of a "natural" as opposed to a "made" environment can be found in William Cronon, *Uncommon Ground: Rethinking the Human Place in Nature* (New York: W.W. Norton, 1996), 34–5, 76, 79–80, 284–7.
117. Leopold was thinking both more broadly and contrary to the land ethic that had driven the settlement of the frontier: "There is no ethic dealing with man's relation to land and the animals and plants which grow upon it. Land, like Odysseus' slave girls, is still property. The land relation is still strictly economic, entailing privileges but no obligations"; quoted in Linklater, *Measuring America*, 234–5.
118. See, for instance, Aldo Leopold et al., *Aldo Leopold's Southwest* (Albuquerque: University of New Mexico Press, 1995), vii.
119. It was published in 1950, and went out of print a few years later, only to be revived by the environmental movement in the 1960s; by the late 1980s, over a million copies had been sold. Thoreau's *Walden* went through the same process of death and resurrection a century earlier (ibid., 1).
120. "Ecology is a science that attempts the feat of thinking in a plane perpendicular to Darwin . . . The outstanding discovery of the twentieth century is not television, or

radio, but rather the complexity of the land organism" (Leopold, *Sand County Almanac*, 189–90.

121. Nash, *Wilderness and the American Mind*, 193–6.

122. Federal Bureau of Investigation, "Edward Abbey" (Washington, DC, n.d.); available online at http://www.fbi.gov/fbi-search#output=xml_no_dtd&client=google-csbe&cx=004748461833896749646%3Ae41lgwqry7w&cof=FORID%3A10%3BNB%3A1&ie=UTF-8&siteurl=www.fbi.gov%2F&q=Edward+Abbey.

123. Edward Abbey, *The Brave Cowboy: An Old Tale in a New Time* (New York: Dodd, Mead, 1956).

124. Edward Abbey, *The Monkey Wrench Gang* (New York: Lippincott, Williams & Wilkins, 1975).

125. See Edward Abbey, "In Defense of the Redneck," in Edward Abbey, *Abbey's Road* (New York: Dutton, 1979).

126. James Bishop Jr., *Epitaph for a Desert Anarchist: The Life and Legacy of Edward Abbey* (New York: Touchstone, Simon and Schuster, 1995), 209.

127. Maynard, *Walden Pond*, 263; and Abbey, *Desert Solitaire*, 129–31.

128. Bishop Jr., *Epitaph for a Desert Anarchist*, 201–2; and Foreman, *Confessions of an Eco-Warrior*, 174–5.

129. In 1980, he descended the Green River through Utah accompanied by a "water-soaked, beer-stained, grease-spotted, cheap paperback copy of Walden" (Maynard, *Walden Pond*, 288).

130. Bishop Jr., *Epitaph for a Desert Anarchist*, 185.

131. Ibid., 132.

132. Ibid., 122.

133. Nash, *Wilderness and the American Mind*, 269–70; Bishop Jr., *Epitaph for a Desert Anarchist*, 228; and Abbey, *Desert Solitaire*, 184.

134. Abbey, *Desert Solitaire*, 169.

135. See T. Coraghessan Boyle, "A voice griping in the wilderness," *New York Times*, February 10, 2002.

136. Bishop Jr., *Epitaph for a Desert Anarchist*, 14. Dave Foreman notes that monkeywrenching has a hallowed past in America, including the Boston Tea Party and the Underground Railway (*Confessions of an Eco-Warrior*, 119).

137. See the town's website at http://www.discovermoab.com/biking.htm.

138. Foreman, *Confessions of an Eco-Warrior*, 70. Roads on public lands total thirteen times the mileage of the Interstate system (Harlick, *No Place Distant*, 2).

139. Harlick, *No Place Distant*, x.

140. Nash, *Wilderness and the American Mind*, 261.

141. Abbey, *Desert Solitaire*, xiv.

142. Stegner and Stegner, *Marking the Sparrow's Fall*, 133.

Chapter 8

1. Lyrics available online at http://allspirit.co.uk/mercy.html.
2. Lawrence Lader and Milton Meltzer, *Margaret Sanger: Pioneer of Birth Control* (New York: Thomas Y. Crowell, 1969), 137–8.
3. Loretta McLaughlin, *The Pill, John Rock, and the Catholic Church: The Biography of a Revolution* (Boston: Little, Brown, 1982), 92.
4. John A. McCracken, "Editorial: Reflections on the 50th Anniversary of the Birth Control Pill," *Biology of Reproduction* 83 (4, 2010): 685.
5. It survived beyond the lives of its creators, ceasing operations only in 1997.
6. The oldest guide to conception is the *Petrie Papyrus,* an 1850 BC recipe book for contraceptive devices and suppositories, including one made from crocodile dung. See James Reed, *The Birth Control Movement and American Society: From Private Vice to Public Virtue* (Princeton, NJ: Princeton University Press, 1978), ix; and Andrea Tone, *Devices and Desires: A History of Contraceptives in America* (New York: Hill and Wang, 2001), 13–14.
7. An example is the development of thin rubber by Connecticut Yankee Charles Goodyear, which others used instead of pig's intestines to produce condoms. Goodyear even mentioned them in his 1853 book, *Gum-Elastic and Its Varieties*. The term "rubbers" has been slang for condoms for 150 years; see Reed, *Birth Control Movement*, 13,15–16, although Tone (*Devices and Desires*, 14) contradicts him; see also idem, 53–5.
8. The ovarian cycle was identified only in 1840. The passive role of women was put forward in 1677 by the Dutch inventor of the first microscope, who found "little animals" in sperm; see Bernard Asbell, *The Pill: A Biography of the Drug that Changed the World* (New York: Random House, 1995), 13–14.
9. "By the turn of the nineteenth century, the fertility of American women had begun a long, secular trend downward" (Reed, *Birth Control Movement*, x).
10. Ibid., 4, 202.
11. Susan E. Klepp, *Revolutionary Conceptions: Women, Fertility, and Family Limitation in America, 1760–1820* (Chapel Hill: University of North Carolina Press, 2009), 28–9, 168–9.
12. Tone, *Devices and Desires*, 15.
13. Elizabeth Frost and Kathryn Cullen-DuPont, *Women's Suffrage in America: An Eyewitness History* (New York: Facts on File, 1992), 2, 18.
14. Reed, *Birth Control Movement*, 5.
15. Elizabeth Siegel Watkins, *On the Pill: A Social History of Oral Contraceptives, 1950–1970* (Baltimore: Johns Hopkins University Press, 1988), 9.
16. Klepp, *Revolutionary Conceptions*, especially chap. 4.
17. John M. Riddle, *Eve's Herbs: A History of Contraception and Abortion in the West* (Cambridge, MA: Harvard University Press, 1997).
18. Lara V. Marks, *Sexual Chemistry: A History of the Contraceptive Pill* (New Haven, CT: Yale University Press, 2001), 41.
19. Klepp, *Revolutionary Conceptions*, 193.

20. The first State law banning abortion came in 1821; two decades later, such laws had been passed in ten States (Tone, *Devices and Desires*, 16).
21. Klepp, *Revolutionary Conceptions*, chap. 4.
22. Ibid., 280.
23. Reed, *Birth Control Movement*, x.
24. The decline in fertility began long before the urbanization of the American population (ibid., 4).
25. Ibid.
26. Watkins, *On the Pill*, 10.
27. A good description of the times is Tone, *Devices and Desires*, chaps. 1–4.
28. Reed, *Birth Control Movement*, 34–9.
29. Since members of Congress know already who will go and who will stay after an election, they tend to become very active in the period between the election and the swearing-in of the new Congress. Such was the case in early 1873 (Tone, *Devices and Desires*, 3–5). One member of that Congress protested the inclusion of a clause prohibiting birth control, but his amendment was voted down in the rush.
30. Ibid., 5.
31. For a description of a number of the more popular birth control books, which sold into many editions before the Comstock repression, see Reed, *Birth Control Movement*, 6–13. In 1839, a Massachusetts physician and graduate of Dartmouth wrote one of the most popular books*, Fruits of Philosophy*, which was still in print in the late 1870s.
32. In 1880, American fertility rivaled that of France as the lowest in modern countries (Reed, *Birth Control Movement*, 17).
33. In 1936, the Supreme Court modified the Comstock laws by removing contraceptive information from the obscenity list (Watkins, *On the Pill*, 14).
34. Over the course of the twentieth century, the complications and hypocrisy introduced into American life by the political pressures of this period were gradually worked out (see Reed, *Birth Control Movement*, 55). As late as 1960, thirty States had laws prohibiting or restricting the sale of contraceptives (Watkins, *On the Pill*, 12). Outside the United States, similar laws were nonexistent until Canada banned the advertisement or sale of contraceptives in 1892 (Tone, *Devices and Desires*, 23).
35. Tone, *Devices and Desires*, 26.
36. Ibid., 106–7. This gave Sanger a legal way to open the country's first birth control clinic in 1923.
37. Watkins, *On the Pill*, 16.
38. Reed, *Birth Control Movement*, 202–5.
39. Elaine Tyler May, *America and the Pill: A History of Promise, Peril, and Liberation* (New York: Basic Books, 2010), 16.
40. Ellen Chesler, *Woman of Valor: Margaret Sanger and the Birth Control Movement in America* (New York: Anchor Books, 1993), 300–1.
41. Reed, *Birth Control Movement*, 239. Birth control was a $250 million business in 1937, including condoms and a catch-all, "feminine hygiene." The Consumers Union provided a quality report on contraceptives to members who wrote they were married and that their physicians advised them to use contraceptives.

42. Ibid., 245. When the Comstock laws were first introduced, the medical profession was trying to get itself legitimized, and was reluctant as a whole to do anything that might seem to endanger this mission (Tone, *Devices and Desires*, 18, 81, 138).
43. Tone, *Devices and Desires*, chaps. 7–8.
44. Chesler, *Woman of Valor*, 391.
45. Reed, *Birth Control Movement*, 231.
46. Much of the following biography is taken from Dwight J. Ingle, "Gregory Goodwin Pincus, 1903–1967: A Biographical Memoir," in *Biographical Memoirs*, vol. 64 (Washington DC: National Academy of Sciences, 1971), 229–270; available online at http://books.nap.edu/html/biomems/gpincus.pdf.
47. Reed, *Birth Control Movement*, 317.
48. In high school he was the editor of a literary journal and then, at Cornell, founded and edited *The Cornell Literary Review* (ibid.).
49. He also found time to marry a social worker; the couple had two children.
50. At one point, Harvard cited his work as "one of the greatest scientific achievements in history," but soon soured on this line of research (May, *America and the Pill*, 23).
51. His work was compared to the scientific dystopian novel Brave New World, by Aldous Huxley, which came out in 1932 (Tone, *Devices and Desires*, 209).
52. These were titular professorships, which allowed him to supervise graduate students at the WFEB.
53. At first, money was tight. Hoagland cut the lawn to save money, while Pincus was the janitor (Tone, *Devices and Desires*, 209). In 1945, when M.C. Chang came to the WFEB, he was asked to serve as the night watchman; see M.C. Chang, "Recollections of 40 Years at the Worcester Foundation for Experimental Biology," *Physiologist* 28 (5): 400.
54. Gregory G. Pincus, *The Control of Fertility* (New York: Academic Press, 1965). The book is dedicated to "sister of mercy" Katharine Dexter McCormick.
55. Ingle, "Gregory Goodwin Pincus," 239.
56. Ibid.
57. Leon Speroff, *A Good Man: Gregory Goodwin Pincus* (Portland OR: Arnica Publishing, 2009).
58. The town had been created by a land speculation company whose members included Erastus Corning, the creator of the New York Central Railroad. It was felt by the directors that using his prestigious name for the town would help attract purchasers of the lots there. A similar approach by others was made much later in the mountain West, when Cody, Wyoming, named after Buffalo Bill Cody, was laid out at the eastern entrance to Yellowstone Park.
59. May, *America and the Pill*, 18. Aldous Huxley, in *Brave New World Revisited* (1958), referred to a birth control "Pill," and has been credited with the term's injection into common parlance (Van Dulken, *Inventing the 20th Century*, 138).
60. Asbell, *Pill*, 10–11.
61. Much of the following is derived from Armond Fields, *Katharine Dexter McCormick: Pioneer for Women's Rights* (Westport, CT: Praeger, 2003).
62. Tone, *Devices and Desires*, 204.
63. She traveled often to Europe and smuggled supplies of diaphragms back to Sanger in her extensive luggage (Chesler, *Woman of Valor*, 431).
64. Marks, *Sexual Chemistry*, 56.

65. Fields, *Katharine Dexter McCormick*, chaps. 28–31. She said one winter that she was "freezing in Boston for the pill" (Marks, *Sexual Chemistry*, 57).
66. Tone, *Devices and Desires*, 214–15. Pincus said about her later, "[l]ittle old woman, she was not. She was a grenadier (215–16).
67. Chesler, *Woman of Valor*, 434.
68. Watkins, *On the Pill*, 6.
69. Tone, *Devices and Desires*, 229–30.
70. Much of this section is derived from two biographies; Lader and Meltzer, *Margaret Sanger*; and Chesler, *Woman of Valor*.
71. She coined the term "birth control" about this time (May, *America and the Pill*, 17).
72. Chesler, *Woman of Valor*, 145–52.
73. May, *America and the Pill*, 17.
74. Sanger lost interest in the variety of devices and jellies that were available and focused her efforts on finding a medical means of birth control that would be under medical supervision (Watkins, *On the Pill*, 14; May, *America and the Pill*, 19).
75. May, *America and the Pill*, 22.
76. The most useful layperson's account of the science behind the Pill is probably Marks, *Sexual Chemistry*. See also Reed, *Birth Control Movement*, 112, 313–16.
77. Asbell, *Pill*, 14–17.
78. A good sketch of Marker's career can be found in ibid., 82–107.
79. In the 1980s, before his death, he was given an honorary doctorate by the university; see American Chemical Society, "National Historic Chemical Landmarks: The Life of Russell Marker" (Washington, DC, 2004); available online at http://acswebcontent.acs.org/landmarks/marker/life.html.
80. In 1980, we visited my wife's brother in what is now Silicon Valley. He worked for Syntex at the time and took me through parts of its "campus," which seemed the most alien factory facility that someone from an automobile manufacturing town could conceive.
81. Watkins, *On the Pill*, 24.
82. They published some preliminary results as early as 1953 (ibid., 28).
83. Tone, *Devices and Desires*, 217.
84. This is now known as the "Rock rebound effect" (Watkins, *On the Pill*, 28).
85. Djerassi claimed that Pincus opted for the Searle steroid over the one he had synthesized for Syntex because Searle was paying him a retainer. Pincus denied this, and other evidence suggests that it was John Rock who recommended it during the trials (Marks, *Sexual Chemistry*, 72–4).
86. The story of the testing is summed up in Tone, *Devices and Desires*, 216–25.
87. Katharine McCormick kept pressing for large-scale testing (May, *America and the Pill*, 27).
88. Watkins, *On the Pill*, 36.
89. May, *America and the Pill*, 31.
90. Quoted in Tone, *Devices and Desires*, 226.
91. Competing versions of the Pill were approved in 1960, 1962, and 1964 (Watkins, *On the Pill*, 38).

92. Reed, *Birth Control Movement*, 321; Watkins, *On the Pill*, 8. There had been potions prescribed to prevent conception since the dawn of history, but no one knew how they actually worked, if at all.
93. In 1970, Searle's then medical director, Irwin Winter, recalled: "The attitudes prevailing in 1959 . . . were vastly different from those which exist today . . . .No major pharmaceutical manufacturer had ever dared to put its name on a 'contraceptive' . . . .Open association with 'contraception' . . . was an activity which our government shunned like the plague" (quoted in Tone, *Devices and Desires*, 227).
94. Watkins, *On the Pill*, 53–5.
95. In 1955, a survey indicated that 70 percent of married women had used some form of contraception; the proportion rose to 80 percent in 1960, the year the Pill was approved (Marks, *Sexual Chemistry*, xv). By 1970, 40 percent were using the Pill, and by 1990, 80 percent of women born since 1945 had used the Pill. The Pill thus appears to mark a shift in method rather than a "revolution. See Watkins, *On the Pill*, 61–2, 133; see also May, *America and the Pill*, 167–8.
96. Watkins, *On the Pill*, 71.
97. Ibid., 5, chap. 5.
98. The connection between the Pill and physicians was reinforced by State laws that its sale required a prescription (ibid., 12).
99. Tone, *Devices and Desires*, 248–9.
100. Watkins, *On the Pill*, 1–4.
101. May, *America and the Pill*, 38–44. Hugh Moore wrote a pamphlet in 1956 called *The Population Bomb*, which predated Paul Erlich's 1968 book of the same title (Chesler, *Woman of Valor*, 438).
102. "Combined Oral Contraceptive Pill," *Wikipedia: The Free Encyclopedia*; available online at http://en.wikipedia.org/wiki/Combined_oral_contraceptive_pill, accessed January 7, 2014.
103. Reed, *Birth Control Movement*, xiii, xvii.
104. Mazlish, *Railroad and the Space Program*, 215–6; the internal quote is from Lowell Tozer, "A Century of Progress, 1833–1933: Technology's Triumph over Man," *American Quarterly* 4 (1, 1952): 78–81.

Chapter 9

1. Adapted from a quotation in Hawke, *Nuts and Bolts of the Past*, 112.
2. Swade and Babbage, *Difference Engine*, 132.
3. Quoted in Struik, *Yankee Science in the Making*, 175.
4. It was built at 44 Taylor St.; the building no longer exists. See Richard P. Scharchburg. *Carriages without Horses: J. Frank Duryea and the Birth of the American Automobile Industry* (Warrendale, PA: Society of Automotive Engineers, 1993), 54.
5. Charles was born in 1862 and Frank in 1869 (ibid., 8).

6. These were high-wheelers, or what in Britain were called penny-farthings, with a large (36-inch to 46-inch) wheel in front and a smaller one in the rear.
7. Scharchburg, *Carriages without Horses*, 8, 51.
8. This venture was in the tradition of Moses Brown's financing Samuel Slater's machinery and mill, those who backed Fulton's steamboat, and various government backers of railroad enterprises (Hawke, *Nuts and Bolts of the Past*, 40).
9. By this time, buggy construction was such that an engine conceivably could be mounted on one, provided the engine was light enough (Finch, *Highways to Heaven*, 26, 37).
10. The first trial was held on September 21 (Scharchburg, *Carriages without Horses*, 77).
11. There were a lot of automobile developers before this, but they tended to concentrate on electric and steam vehicles (ibid., 2).
12. Ibid., 94.
13. Finch, *Highways to Heaven*, 39.
14. The Duryeas participated in two other US races in 1896, one in New York and the other in Providence, Rhode Island, the first in the country to be done on a track (Scharchburg, *Carriages without Horses*, 75, 108, 121, 126).
15. Their argument was probably over focusing on selling licenses for production in Europe and Canada versus concentrating on design, quality, and production. The Duryea was assembled by students from a local industrial school, and quality became an issue (ibid., 143, 151).
16. The company was sold in 1898 to the National Carriage Co. of New York City, which did nothing with it (ibid., 150).
17. Scharchburg (ibid., 184) says, however, that the company folded in 1915.
18. Diamond, *Guns, Germs, and Steel*, 243.
19. Scharchburg, *Carriages without Horses*, 7–8).
20. Lenoir had also used coal gas to power an internal combustion engine in 1863 (Finch, *Highways to Heaven*, 27).
21. See, for instance, David Traxel, *1898: The Birth of the American Century* (New York: Vintage Books, 1999), 57.
22. Karl Benz drove his single-cylinder Motorwagen in the streets of Mannheim in 1886 (Finch, *Highways to Heaven*, 29). In 1896, he developed the first truck (Diamond. *Guns, Germs, and Steel*, 243).
23. Daimler adapted a carriage with an engine and a tiller steering apparatus and drove it in 1886 (Finch, *Highways to Heaven*, 29).
24. Ibid., 37. The article appeared in 1889 and inspired, at least, the Duryea brothers to develop their car.
25. Davies, *American Road*, 233–5.
26. Finch, *Highways to Heaven*, 56. They used Daimler engines.
27. Wish, *Society and Thought in America*, 275.
28. Oliver, History of American Technology, 487.
29. Roper died at age seventy-three in 1896; he had a heart attack while driving his motorcycle at 40 mph near Harvard University (Lienhard, *Inventing Modern*, 128).
30. Mazlish, *Railroad and the Space Program*, 166
31. Oliver, *History of American Technology*, 479.
32. Similar choices for gasoline engines were made in motorizing the bicycle and the airplane about the end of the 1800s as well (Lienhard, *Inventing Modern*, 117).

33. Traxel, *1898*, 57.
34. Ron Chernow, *Titan: The Life of John D. Rockefeller, Sr.* (New York: Random House, 1998), 101.
35. This is not too far off the choice of computer technology that was available in the 1980s. During the course of that decade, I moved from a Commodore 64 to an Atari to an IBM, skipping the technology of Apple, the first popularizer of the personal computer. The principles were the same in each computer, but the operating systems were quite different, and eventually society, led by business desires for standardization, settled on one basic system. Almost thirty years later, the majority of computers still use the Microsoft operating system.
36. Hawke, *Nuts and Bolts of the Past*, 32. Historians suggest that a mill worker's family could save as much as a sixth of its income and soon afford to move West and buy land and the necessities for a frontier farm (128–9).
37. Chandler Jr., *Visible Hand*, 54–5.
38. The Lowell shops were involved in the early railroad industry and developed a proficiency in metalworking as well as woodworking (Struik, *Yankee Science in the Making*, 319). These shops gradually lost their primacy in machinery as other centers in New England and elsewhere began to develop (Dalzell*, Enterprising Elite*, 124).
39. See, for instance, Christopher Clark, *The Roots of Rural Capitalism: Western Massachusetts, 1780–1860* (Ithaca, NY: Cornell University Press 1990); see also Rothenberg, "Invention of American Capitalism," 93–4.
40. These were the "Wyoming War" or the "Pennamite Wars"; see, for instance, Paul B. Moyer, *Wild Yankees: The Struggle for Independence along Pennsylvania's Revolutionary Frontier* (Ithaca, NY: Cornell University Press, 2007).
41. "And through them all was a strain of respect for expediency: whether their affairs were of the pulpit or of the purse, the conviction persisted that attainment of a glorious end could justify the employment of an opportune means. Such were the enduring qualities of the Yankees of Connecticut" (Lee, *Yankees of Connecticut*, 6).
42. David S. Landes, *Revolution in Time: Clocks and the Making of the Modern World* (New York: Barnes & Noble, 1993), 313.
43. He was using a waterpowered cutting machine by 1803 (ibid., 310). In general, wood-cutting machines tended to be wasteful of material, but that was cheap; what was expensive was labor (idem, *Wealth and Poverty of Nations*, 302).
44. Hawke, *Nuts and Bolts of the Past*, 70–3. In 1838, Chauncey Jerome began to manufacture brass clocks that were big sellers for less than 50 cents — probably something like $325 today (Landes, *Revolution in Time*, 311; see also Temin, "Industrialization of New England," 117).
45. Landes, *Wealth and Poverty of Nations*, 191.
46. Even a generation before the Revolution, Connecticut had more metal shops (foundries, smithies, and so on) than the rest of the colonies combined (Newell, "Birth of New England," 60).
47. Dalzell, *Enterprising Elite*, 166–71.
48. Depending on the size and the risk, outside capital, usually from Boston, might be brought in to help with financing; see Brown, *Massachusetts*, 140.
49. See, for example, Chandler Jr., *Visible Hand*, 270; and Lee, *Yankees of Connecticut*, 118–19. In terms of creativity and diversity of employment, Connecticut residents consistently

exceeded the ratio of patents to population, sometimes by enormous margins. By the 1860 census, Massachusetts residents were employed in three hundred of the six hundred industrial, commercial, and agricultural occupations used by government statisticians. (Brown, *Massachusetts*, 142).

50. Edward Deming Andrews, *The People Called Shakers* (1953; New York: Dover, 1963), 124–5.
51. Lee, *Yankees of Connecticut*, 118–19.
52. James M. McPherson, *Battle Cry of Freedom: The Civil War Era* (New York: Oxford University Press, 1988), 19.
53. Hawke, *Nuts and Bolts of the Past*, 32–3, 40.
54. Transportation difficulties both protected local craftspeople and restricted their markets; for a description, see Richard Stott, "Artisans and Capitalist Development," in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul A. Gilje Lanham, MD: Rowman & Littlefield, 1997), 103.
55. A hundred years later, Frederick Taylor's assignment at the Watertown Arsenal was "to provide stock, tools and materials for keeping [his 250 employees] employed, to preserve order, subordination, regularity of exertion, [and] to retain every branch of business in a relative state of progression with the rest" (Aitkin, *Taylorism at Watertown Arsenal*, 57).
56. Except for Oliver Hazard Perry's naval victory on Lake Erie and the belated repulse of British soldiers at New Orleans, the war had proven to be a series of American mishaps largely traceable to unpreparedness both in leadership and materiel. At the end of the war, the United States had had to re-equip all aspects of its military, and in 1815 the new Ordnance Department, along with Whitney and the heads of the Springfield and Harpers Ferry arsenals agreed on a standardized musket to replace the various (and largely broken) muskets used in the war (Smith, *Harpers Ferry Armory*, 107).
57. The legislation required the new department "to draw up a system of regulations . . . for the uniformity of manufactures of small arms" (Hawke, *Nuts and Bolts of the Past*, 104). This was much easier said than done. For instance, it took until 1823 before Harpers Ferry agreed to use gauges to measure parts for even relative uniformity, something that had been a practice at Springfield for years (Smith, *Harpers Ferry Armory*, 108–11).
58. The story of the twenty-five-year quest to produce muskets in quantity with interchangeable parts is told in detail in Merritt Roe Smith, "Military Entrepreneurship," in *Yankee Enterprise: The Rise of the American System of Manufactures*, ed. Otto Mayr and Robert C. Post (Washington, DC: Smithsonian Institution Press, 1981, rev. 1995).
59. Beatty, *Colossus*, 91; see also Gordon and Malone, *Texture of Industry*, 87.
60. Hawke, *Nuts and Bolts of the Past*, 97–103. Whitney's ruse was confirmed by researchers only in the 1960s when they discovered discrepancies between some of his parts still extant and the documentation surrounding them.
61. Lee, *Yankees of Connecticut*, 113; and McPherson, *Battle Cry of Freedom*, 16.
62. Harold Livesay, quoted in Hawke, *Nuts and Bolts of the Past*, 102.
63. Struik, *Yankee Science in the Making*, 187.
64. Gordon and Malone, *Texture of Industry*, 87.
65. He insisted, almost from the beginning, that his smaller armory could outproduce the larger establishment at Harpers Ferry (Smith, *Harpers Ferry Armory*, 63).

66. In any case, the continual movement of machine-shop workers meant that new processes would not be secret for long. An example from the latter part of the nineteenth century is the career of Henry Leland:

a. Henry M. Leland grew up on a New England farm, began as a mechanician in a loom factory, moved on to the armory at Springfield, to the Colt factory in Hartford, to a wrench company in Worcester, then to Providence and Brown & Sharpe, where he headed the sewing-machine department. At every stop along the way, "My vision of the possibilities of manufacturing broadened," he said in old age. "I realized that manufacturing was an art and I resolved to devote my best endeavors and my utmost ability to the Art of Manufacturing." He ended up in Detroit where he designed and built the first engines for the Cadillac automobile. (Hawke, *Nuts and Bolts of the Past*, 33, 133)
b. Lee was not averse to buying rights from patent holders and synthesizing their machines into ones that were more effective; see, for instance, Smith, *Harpers Ferry Armory*, 117–24.

67. Gordon and Malone, *Texture of Industry*, 354–5. The use of the trip-hammer to make iron shapes in Massachusetts dates back to 1808 (Smith, *Harpers Ferry Armory*, 114).
68. Chandler Jr., *Visible Hand*, 73.
69. It was not until the 1850s and 1860s that calipers and micrometers were introduced into manufacturing in any large way. Of course, by then, machinists were able to produce parts accurate to 1/10000 of an inch, so they were necessary. Their widespread use reflected Yankee educational standards (Gordon and Malone, *Texture of Industry*, 377).
70. A technical discussion of the meaning and implications of interchangeability and the use of gauges can be found in Paul Uselding, "Measuring Techniques and Manufacturing Practice," in *Yankee Enterprise: The Rise of the American System of Manufactures*, ed. Otto Mayr and Robert C. Post (Washington DC: Smithsonian Institution Press, 1981, rev. 1995).
71. Springfield quickly adapted the water-driven trip-hammer to make barrels more efficiently, but Harpers Ferry resisted, and continued doing them by hand. The failure rate between 1823 and 1829, before Harpers Ferry finally adopted the trip-hammer, was 26 percent; with the machine it was 8–12 percent (Smith, *Harpers Ferry Armory*, 95, 114–5).
72. A good rendition of Blanchard's career is found in ibid., 124–38; see also Struik, *Yankee Science in the Making*, 190.
73. The process used to guide the lathe-cutting tool is described in Hawke, *Nuts and Bolts of the Past*, 131–2; see also Hindle, *America's Wooden Age*, 151–3.
74. Hawke, *Nuts and Bolts of the Past*, 105–6; Temin, "Industrialization of New England," 117. In England, the engineer Isambard Kingdom Brunel had sequenced twenty-one machines prior to this to make pulleys for warships. The importance of sequencing single-purpose machines is crucial as they led eventually to the twentieth-century assembly line.
75. The importance of wood as an industrial material in the United States can hardly be overstated. American Iron making, by contrast, lagged behind British innovation because the only real demand for the product in the United States was as bars that local

blacksmiths made into domestic products (Johnson, *History of the American People*, 371). Typical was the career of Ephilalet Remington in Ilion Gorge, New York, whose father was a blacksmith with a sideline of forging rifle barrels for local farmers, something that over the next generation he grew to be E. Remington and Sons, manufacturers of a famous line of rifles.

76. Eli Terry was using waterpowered cutting tools to shape wooden parts as early as 1803. In 1807, he produced three thousand wooden clocks (Landes, *Revolution in Time*, 310). By 1820, other producers were in the business, making as many as fifteen thousand clocks a year (Chandler Jr., *Visible Hand*, 56). It took until 1838 for Chauncey Jerome, a pupil of Terry's, to produce brass parts in quantity that replaced wooden clock mechanisms (Landes, *Revolution in Time*, 311). The British and other Europeans did not respond to American mass production techniques, preferring to concentrate on the higher-margin upscale market (313).
77. They went as far west as Buffalo and as far south as Richmond, Virginia, in the late 1820s (Chandler Jr., *Visible Hand*, 56; see also Hawke, *Nuts and Bolts of the Past*, 69–73).
78. Hawke, *Nuts and Bolts of the Past*, 69.
79. Brown, *Massachusetts*, 143.
80. Smith, *Harpers Ferry Armory*, 156.
81. Ibid., 222–41.
82. North had acquired his first arms contract in 1813, in the midst of the War of 1812, to provide pistols for the war effort (Lee, *Yankees of Connecticut*, 113). He was also the inventor of the milling machine in 1816 (Hawke, *Nuts and Bolts of the Past*, 131). North became involved as a contractor as there was a demand by State militias for Hall's arms, but federal armories were prohibited from selling arms to anyone other than the federal government (Smith, *Harpers Ferry Armory*, 210–12).
83. Gordon and Malone, *Texture of Industry*, 297, 387. At the 1851 Great Exhibition in the Crystal Palace, London, the talk was about Sir Joseph Whitworth's machines, which could cut screw threads to 1/10000 of an inch. It was possible for artisans at the extreme edge of technology to match this feat in the mid-1820s, but not in any quantity (Linklater, *Measuring America*, 207).
84. Hall spent what was then the fabulous sum of $2 million on a set of machines, tools, and gauges that could be used by relatively unskilled labour to produce muskets (Hawke, *Nuts and Bolts of the Past*, 154).
85. McPherson, *Battle Cry of Freedom*, 16. The British imported American machinery for their Enfield Armoury in time to use its products in the Crimean War.
86. For Colt's story, see, for instance, Hawke, *Nuts and Bolts of the Past*, 145–7.
87. DeVoto, *Year of Decision*, 219–21.
88. Temin, "Industrialization of New England," 119.
89. Colt found, when he established a plant in Britain, that none of the equipment manufacturers could produce machinery to the precision he needed, so he imported it from America, to the chagrin of the British government (DeVoto, *Year of Decision*, 219–20).
90. In 1828, one of the Lowell mills became the first to install leather belts in place of wood shafts to run machines in a plant. Belts could be repaired or replaced faster than wooden gears and shafts, and could be rearranged more easily. The British resisted this

innovation, as they had developed better iron gears for their shafts (Gordon and Malone, *Texture of Industry*, 312–13).

91. Quoted in Hawke, *Nuts and Bolts of the Past*, 155.
92. Hawke, *Nuts and Bolts of the Past*, 131–2.
93. When the first buildings were constructed using this method, someone said they looked less sturdy than a balloon, and the epithet stuck. The method has been superseded by others since the Second World War. See "Framing (Construction): Platform Framing," *Wikipedia: The Free Encyclopedia*; available online at http://en.wikipedia.org/wiki/Platform_framing#Platform_framing, accessed January 7, 2014. See also McPherson, *Battle Cry of Freedom*, 17. Tolerances were forgiving in houses; one simply used a generous amount of putty to fill in the cracks between windows and studs (Landes, *Wealth and Poverty of Nations*, 302).
94. Hawke, *Nuts and Bolts of the Past*, 204; McPherson, *Battle Cry of Freedom*, 17.
95. The Ames brothers had been employees of the Lowell shops before branching out on their own (Struik, *Yankee Science in the Making*, 319).
96. Chandler Jr., *Visible Hand*, 77; Temin, "Industrialization of New England," 119. Ames Brothers was one of the first machine-tool companies to sell a standard line of machine tools to the general public. Besides being major suppliers to the textile and arms manufacturers, they made mining equipment, and various forms of lathes and other cutting tools for businesses all across the country (Smith, *Harpers Ferry Armory*, 288). Pratt and Whitney is a part of today's manufacturing conglomerate, United Technologies. See also Hawke, *Nuts and Bolts of the Past*, 178–81.
97. The cost of the government armory program has been estimated at $2 million, a very large sum in the first half of the nineteenth century. Its extension into the private sector was both partial and gradual in the second half, increasing as the average cost of interchangeability declined. See Hawke, *Nuts and Bolts of the Past*, 154–6; and Landes, *Wealth and Poverty of Nations*, 191, 304.
98. A journeyman machinist in Boston, Elias Howe, had built the first such machine (McPherson, *Battle Cry of Freedom*, 19).
99. A British fact-finding commission, sent primarily to look at the production methods in Colt's Hartford factory, also noted the wide application of similar tools in dissimilar production enterprises (Beatty, *Colossus*, 91).
100. Gordon and Malone, *Texture of Industry*, 297, 299.
101. Landes, *Wealth and Poverty of Nations*, 303.
102. A British visitor in 1841 noted about the machine process: "The skill of the eye and the hand, acquired by practice alone, is no longer indispensable; and if every operative were at once discharged from the Springfield armoury, their places could be supplied with competent hands within a week" (quoted in ibid.).
103. Johnson, *History of the American People*, 316; Landes, *Wealth and Poverty of Nations*, 320–1. Even so, mass production also increased demand for skilled labour as well; see Stott, "Artisans and Capitalist Development," 106.
104. DeVoto, *Year of Decision*, 218–19.

Chapter 10

1. Sampson, *Company Man*, 17.
2. Kinderhook, New York, just south of Albany, was the home town of "Old Kinderhook," who was running for re-election; see Schlesinger Jr., *Age of Jackson*, 298; and George P. Olin, *The Story of Telecommunications* (Macon, GA.: Mercer University Press, 1992), 211. Allan Metcalf, in *OK: The Improbable History of America's Greatest Word* (New York: Oxford University Press, 2011), claims that "OK" was invented by a Boston editor in 1839 as a joke involving a trivial spat between Boston and Providence, Rhode Island, playing off their local pronunciation of "all correct." Old Kinderhook's campaign crew ignored the joke when OK became part of his advertising. Then, as the telegraph system grew in the 1840s, OK became common shorthand for telegraphers — and on it went.
3. Beatty, *Colossus,* 1.
4. Paul A. Gilje, "The Rise of Capitalism in the Early Republic," in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul A. Gilje (Lanham, MD: Rowman & Littlefield, 1997), 4.
5. Klein, *Empire State*, 665.
6. Albany had at least two other names before 1686. It was called Beverly, "beaver district," at its founding as an inland stockade, then Willemstad as it grew into a town site andgiven a charter of incorporation by the British in 1686; see William Kennedy, *O Albany!* (New York: Penguin, 1983), 155. In the early nineteenth century, it was described as "a third- or fourth rate town . . . indeed Dutch, in all its moods and tenses; thoroughly and inveterately Dutch. The buildings were Dutch — Dutch in style, in position, attitude, and aspect. The people were Dutch, the horses were Dutch, and even the dogs were Dutch" (79).
7. Klein, *Empire State*, xix, 252, 287.
8. It had doubled in size in the preceding decade from 12,630 to more than 25,000 (ibid., 309-10). Beaumont compared it to Amiens and the non-estuarial Hudson to the Somme River; see Pierson, *Tocqueville in America*, 176.
9. Ibid., 348–9.
10. Frederick Marryat, *A Diary in America: With Remarks on Its Institutions* (Philadelphia: Carey & Hart, 1839), 64–5.
11. Begun in 1823 to anticipate the canal's traffic, it was a pier that paralleled the river, creating a basin that could hold a thousand canal boats (Kennedy, *O Albany!*, 59).
12. Fox and Remini, *Decline of Aristocracy*, 304.
13. Klein, *Empire State*, 480.
14. Kennedy, *O Albany!*, 60.
15. Ibid., 63.
16. Johnson, *History of the American People*, 72.
17. Fernand Braudel, *The Wheels of Commerce, Civilization and Capitalism 15th–18th Century*, vol. 2 (New York: Harper and Row, 1979, 1982), chaps. 3–4.
18. Max Weber, *The Protestant Ethic and the Spirit of Capitalism* (London: Allen and Unwin, 1930; repr. Routledge Classics, 2001), xxxi–xxxii.

19. The attempt to build a communal society at Plymouth failed early on with the near-demise of the colony; until the Mormon experiment two hundred years later, this was not considered a large-scale option.
20. For an example of the value of partnerships in early America, see Naomi Lamoreaux, "The Partnership Form of Organization: Its Popularity in Early Nineteenth Century Boston," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997).
21. Rosenberg and Birdzell (*How the West Grew Rich*, 190, 197) trace their use back to Roman law, where any unlicensed association of citizens was considered a conspiracy against the state. However, their use for economic purposes is much more recent.
22. John Micklethwait and Adrian Wooldridge, *The Company: A Short History of a Revolutionary Idea* (New York: Modern Library Chronicles Book, 2003), 4–5.
23. Ibid., 12. Early municipal corporations were established to allow towns to create and autonomously manage market places and other commonly used facilities; see H. Hartog, *Public Property and Private Power: The Corporation of the City of New York in American Law, 1730–1870* (Chapel Hill: University of North Carolina Press, 1983).
24. In 1819 Chief Justice John Marshall defined it as "an artificial being, invisible, intangible and existing only in contemplation of law" (quoted in Johnson, *History of the American People*, 571). It was a legal convenience for many to act as one.
25. The term "company" comes from the medieval Italian, when merchants would agree to share trade risks while they broke bread, a *compagnie*, or, from the Latin *cum panis* (Sampson, *Company Man*, 16). The term "bank" can be traced to the Italian *banchi*, referring to the benches where financiers sat while doing their business (Micklethwait and Wooldridge, *Company*, 8).
26. Lamoreaux, "Partnership Form of Organization," 273.
27. Apparently, the oldest business corporation still in existence is a Swedish company called Stora Enso, whose ancestor was a mining company that began in 1288 and received a royal charter in 1347 (Micklethwait and Wooldridge, *Company*, 12). Stora operated a paper plant in eastern Nova Scotia for a number of years. Some of the concerns about the depersonalization of economic life and the divorce of its morals from those in private life are expressed in Schlesinger Jr., *Age of Jackson*, 334–5. This is also the theme that runs through Charles Sellers, *The Market Revolution: Jacksonian America, 1815–1946* (New York: Oxford University Press, 1995).
28. Micklethwait and Wooldridge, *Company*, 19–20.
29. See Gordon, *Great Game*, 22–3; and Newell, "Birth of New England," 17.
30. Gordon, *Great Game*, 22–3.
31. The British had some prior experience. The joint-stock Muscovy Company had been chartered in 1555 to do business with Russia and to explore for a northeast passage to China (Micklethwait and Wooldridge, *Company*, 18).
32. Ibid., 21–8.
33. The seven hundred "adventurers" or investors in the Virginia company did not get their money out of their attempts, so encouraging other companies to take up part of their territory seemed like a good idea (Beatty, *Colossus*, 1).
34. Many of the features of English trading company charters were perpetuated in later State constitutions and in the US constitution; see John P. Davis, *Corporations* (1905; New York: Capricorn Books, 1961), 201.

35. Sir Walter Raleigh's attempts to establish colonies in Virginia led him and others to believe that personal resources could not be adequate to meet colonial capital and operating needs, and that a corporation was necessary; see Billington, *Westward Expansion*, 49.
36. The English government assumed that the directors of these New England companies would remain in England, but this proved not to be the case, as most of their shareholders emigrated to the new colonies. Those who put up the money, the "adventurers," did remain there, but most of the directors did not. The adventurers were the historical antecedents of today"s "venture capitalists"; see Gordon, *Business of America*, 4. As the Puritan colonists in these "corporate" colonies became the controlling shareholders, the corporate "annual meeting" was turned into a kind of legislature. In effect, these colonies became self-governing corporations, a conception that caused trouble later on.
37. The so-called Bubble Act was passed in 1720 (see Landes, *Wealth and Poverty of Nations*, 257; see also Micklethwait and Wooldridge, *Company*, 31–3). A Scotsman, John Law, managed to reduce the economy of France to depression with his Mississippi Company, which created a similar bubble in 1718–20 (Micklethwait and Wooldridge, Company, 28–31). For a succinct discussion of this law's effects in Britain, see Crump, *Brief History of the Age of Steam*, 180.
38. Sarah Gordon, *Passage to Union: How the Railroads Transformed American Life, 1829–1929* (Chicago: Ivan R. Dee, 1996), 16–22.
39. As early as the 1650s, leading Massachusetts merchants were incorporated to speculate in lands in Rhode Island and eastern Connecticut (Billington, *Westward Expansion*, 86).
40. In English law, a corporation could be formed without a charter, but then it was considered a form of partnership, with unlimited liability accruing to the shareholders as if they were partners (Rosenberg and Birdzell, *How the West Grew Rich*, 195–7).
41. A broader rationalization and explanation for the freeing of enterprises from hierarchical and elite control is found in ibid., 22–4, 113–15.
42. Dalzell (*Enterprising Elite*, 28) discusses this logic in terms of the formation of the Lowell mill at Waltham and its successors in Lowell.
43. These are sometimes described using the archaic term of "franchised" corporations, and are best seen today as utilities, where there is often a need for a legislated monopoly (Rosenberg and Birdzell, *How the West Grew Rich*, 194–5).
44. It should be kept in mind that the overwhelming number of enterprises, then as now, were small firms with a single location and proprietorship. What changed with incorporation reform was the ability to amass capital for large-scale activities. Where the locations were diverse, as in trade, partnerships were more common; see Chandler Jr., *Visible Hand*, 14, 16.
45. Peter F. Drucker, *The Concept of the Corporation* (New York: John Day, 1946), 209–12. Corporations still derive their legal existence from government's belief that they serve a broader public purpose, something forgotten at times in our society.
46. For the general story, see Gordon, *Great Game*, 49–50; and for an evaluation of the importance of the act, see W.C. Kessler, "A Statistical Study of the New York General Incorporation Act of 1811," *Journal of Political Economy* 48 (6, 1940): 877–82. The idea of general incorporation had preceded the act, as it had been used in the 1700s to permit easy formation of a church facility; see Ted Nace, *Gangs of America: The Rise of Corporate Power and the Disabling of Democracy* (San Francisco: Berrett-Koehler,

2005), 72. Massachusetts passed a similar act in 1818; see William J. Fowler Jr., "Marine Insurance in Boston: The Early Years of the Boston Marine Insurance Company, 1799–1807," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997), 165.

47. See Richard Hofstadter, "William Leggett, Spokesman of Jacksonian Democracy," *Political Science Quarterly* 58 (4, 1943): 587; and Davis, *Corporations*, viii. There were also some strange benefits: startup loans to eligible entrepreneurs were authorized, as was exemption from militia or jury duty for owners of textile companies; see Berstein, *Wedding of the Waters*, 152.
48. Beatty, *Colossus*, 45–6. Even so, Massachusetts had been early off the mark in granting around a hundred charters for incorporation in the decade drom 1780 to 1790, though only a few were for for-profit companies. The first insurance company in Massachusetts to gain a charter did so in 1795. Insurance companies were required to place most of their capital in bank stock; see Fowler Jr., "Marine Insurance in Boston," 165–6.
49. Schlesinger Jr., *Age of Jackson*, 188–9.
50. Hofstadter, "William Leggett," 589. Leggett's philosophy would be seen as conservative today, but in an era of monopolies, imprisonment for debt and property qualifications in order to vote, this was heady stuff.
51. Ibid., 589. The "Locofocos" — the left wing of the Democratic Party in New York, was especially vociferous about the Democratic-dominated legislature's tendency to charter banks that benefited its members; see Fox and Remini, *Decline of Aristocracy*, 382–3. One democratic fallout of the reform movement was the low cost of incorporation: one Connecticut entrepreneur was said to have paid out 50 cents to acquire his incorporation papers (Beatty, *Colossus*, 85).
52. For Pennsylvania, see Susan Pace Hamill, "From Special Privilege to General Utility: A Continuation of Willard Hurst's Study of Corporation," *American University Law Review* 49 (1999): 101. For Connecticut, see Schlesinger Jr., *Age of Jackson*, 337; Micklethwait and Wooldridge, *Company*, 46; there were limits of $200,000 of capital (Davis, *Corporations*, ix). For New York, see Hofstadter, "William Leggett," 594; Kessler, "Statistical Study," 878; Gordon, *Passage to Union*, 21. New York dropped the categorization of purposes eligible for incorporation in favor of "any lawful purpose" in 1866, followed gradually by other States (Nace, *Gangs of America*, 77).
53. By 1875, over 90 percent of the States had general incorporation laws (Hamill, "From Special Privilege to General Utility," 87).
54. Ibid., 101–7; Micklethwait and Wooldridge, *Company*, 46. These continuing restrictions led more ambitious groups to pursue special charters (Davis, *Corporations*, xi).
55. Gordon, *Passage to Union*, 34. Even so, the use of special charters did not die out — between 1875 and 1996, the States issued more than twenty thousand special charters (Hamill, "From Special Privilege to General Utility," 86n17).
56. Nace, *Gangs of America*, 73.
57. In the 1400s, English courts had already defined the concept. "If something is owed to the group, it is not owed to the individuals, nor do the individuals owe what the group owes" (Beatty, *Colossus*, 6).
58. The practice dates at least back to the Middle Ages (Micklethwait and Wooldridge, *Company*, 8).

59. It is thought that one in five households in early nineteenth-century America faced insolvency at least once; see Jane Kamensky, *The Exchange Artist: A Tale of High-Flying Speculation and America's First Banking Collapse* (New York: Viking, 2008), 11.
60. Schlesinger Jr., *Age of Jackson*, 48; Fitzpatrick, *History's Memory*, 48.
61. Fox and Remini, *Decline of Aristocracy*, 353, 357.
62. The concentration on imprisoning people for a particular crime has not changed a lot. Today, about 20–30 percent of State prison inmates and as much as 60 percent of federal inmates are there for drug-related crimes; see Common Sense for Drug Policy, "Drug Offenders in the Correctional System"; available online at http://drugwarfacts.org/cms/node/63. As far as can be found, nobody today is in these prisons for not repaying debt.
63. Limited liability did not become entrenched in corporate law until the 1830s (Hamill, "From Special Privilege to General Utility," 92n42). In 1996, there were just under 4.5 million corporations — or 1.6 percent of all legal/physical persons — in the United States, of which slightly more than half had assets of $100,000 (83n1). See also Gilje, "Rise of Capitalism," 4. It could be a political football, however: the law on liability changed five times in Maine between 1823 and 1857, depending on whether the Democrats or Whigs were in power (Nace, *Gangs of America*, 78).
64. This was not an unmixed blessing, as many lenders wanted personal security and not collateral. They were also suspicious of this new use of the law. See Lamoreaux,"Partnership Form of Organization," 275.
65. Nace (*Gangs of America*, 74) cites a study by Royal Dutch/Shell indicating that a typical *Fortune* 500 corporation survives about fifty years before it disappears through bankruptcy or merger.
66. Often, incorporation allowed for interfamily alliances while preserving the separate family fortunes. This was the case with many Beacon Hill and other prominent Boston families; see Peter Dobkin Hall, "What the Merchants Did with Their Money," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997), 370.
67. Trading was largely centered on the transportation industry until 1890, when the rise of the trusts led to more Wall Street involvement in trading shares of industrial corporations (Rosenberg and Birdzell, *How the West Grew Rich*, 200). Mohawk and Hudson RR shares first traded there in 1830 (Burrows and Wallace, *Gotham*, 567). The Boston Stock Exchange, in fact, was the leading exchange for industrial stocks until 1890, because Wall Street resisted listing them until then (Rosenbloom, "Challenges of Economic Maturity," 188–9).
68. Nace, *Gangs of America*, 79.
69. Burrows and Wallace, *Gotham*, 1045–6. This shifted activity away from creating trusts, which were declared illegal in 1889, toward using interstate incorporation via New Jersey.
70. See "Making a Success of Failure," *Economist*, January 9, 2010, 68.
71. Chief Justice John Marshall is often given credit for helping to establish the outlines of the modern corporation (Johnson, *History of the American People*, 244).
72. Schlesinger Jr., *Age of Jackson*, 324; see also Nace, *Gangs of America*, 84–5.
73. Schlesinger Jr., *Age of Jackson*, 324–6.

74. Alexander Hamilton and Robert Morris attempted to create a "congressional bank" in 1781, during the Revolutionary War, but Congress did not feel it had the authority, so in 1782 they then secured common charters from a number of colonies for a Bank of North America. In 1791, after the Constitution was ratified, it was replaced by the federally chartered Bank of the United States (Hamill, "From Special Privilege to General Utility," 89–90n28,32,36.
75. Ibid., 108n102.
76. Martin, *Railroads Triumphant*, 325.
77. Rosenberg and Birdzell, *How the West Grew Rich*, 201, 212; Gordon, *Great Game*, 170.
78. The trust was not an invention of the 1880s. As early as 1765, Patrick Henry created a trust, the North American Land Company, to protect the speculative assets of Robert Morris; other trusts were devised after the Revolutionary War for similar purposes (Linklater, *Measuring America*, 149–50).
79. Roberts, *History of the English-Speaking Peoples since 1900*, 40.
80. Controversies between the colonies — those in New England, in particular — with Britain over local banking and the use of paper money were a contributing factor to the Revolution. See Margaret E. Newell, "A Revolution in Economic Thought: Currency and Economic Development in Eighteenth-Century Massachusetts," in *Entrepreneurs: The Boston Business Community, 1700–1850*, ed. C.E. Wright and K.P. Viens (Boston: Massachusetts Historical Society, 1997), 1.
81. The difference between specie and scrip is the difference between whether a user believes the money is worth what it says it is to the wider public. Specie was usually metal coins made by a government, and thus regarded as "hard" currency (Kamensky, *Exchange Artist*, 8). Scrip — say, paper currency printed by a frontier bank with few tangible assets — engenders a lot less trust than a federal government "greenback" and would be exchanged for a greenback on;y at a discount. A discount of 100 percent meant the local money was worthless, but most bills from banks with good reputations were discounted only slightly.
82. Each colony had the usual British-designated currency of pounds, shillings, and pence, but they were not exchanged equally with British currency (Berstein, *Wedding of the Waters*, 147). The "dollar," a corruption of a Spanish corruption of a Bohemian word for coins made from the metal from a particular European silver mine, did not become the official US currency until the 1790s.
83. Kamensky (*Exchange Artist*, 14–17) claims this was the first issue of paper money by a government in the Western world.
84. Massachusetts issued its first Revolutionary War bonds a couple of weeks after the events at Concord and Lexington. The Continental Congress issued $2 million in paper currency in May 1775, fourteen months before the Declaration of Independence. By the end of 1779, there was $226 million of them in circulation. Someone or something truly worthless was said to be "not worth a Continental" (ibid., 23). By then, the continental was discounted to about 3 cents relative to specie; it declined to about 150:1 by 1781 (24).
85. Rothenberg, "Invention of American Capitalism," 76.
86. Merchants and merchant bankers financed international trade, while the incorporated banks concentrated on domestic finance (Chandler Jr., *Visible Hand*, 29).

87. For a short explanation of the evolution of merchants' bills of exchange into a rudimentary banking institution, see Rosenberg and Birdzell, *How the West Grew Rich*, 117). Part of the 2007–8 problem with banks arose from overleveraging. Instead of a more normal 10:1 ratio, some of the more reputable banks let their ratios go as high as 30:1. The same thing happened in 1837.
88. After the demise of the First Bank of the United States in 1811, the number of State banks rose two and a half times in two years, and though their leverage was only supposed to be 3:1, no one checked into the actual capital in the banks or whether they were restraining themselves to the legal leverage limit (Johnson, *History of the American People*, 291). As the country slipped into war, the money supply grew by about 20 percent per year. New England banks refused to honor banknotes from the South and West, while their own notes commanded a premium in Philadelphia. By the end of the War of 1812, virtually all banks outside New England had to stop payment on their notes and the federal government was near financial collapse. Not surprisingly, the peak number of banks in the United States came in the 1920s, just before the Great Depression (Gordon, *Great Game*, 225).
89. Said to be located so far back in the woods that only a wildcat could find them (Hamill, "From Special Privilege to General Utility," 100n73).
90. Dunbar and May, *Michigan*, 96. One scam was to have chests of bullion to display as capital in which the coins were only a layer or two deep and the rest just sand or iron bars. Another was to have a load of valid capital moved around from bank to bank ahead of inspectors. Counterfeiting was a cottage industry — "all you needed to start a bank issuing paper money were plates, presses and paper" (Johnson, *History of the American People*, 283).
91. Most banks did not have branches and were small in size. As a result, there were many of them; in New England, there were 172 in 1830 and 505 in 1860 (Temin, "Industrialization of New England," 150). Most banks did not take deposits; instead, people bought share in them (151).
92. For an interesting study of an early New England case of financial shenanigans, including a fraudulent Michigan bank, lots of paper money issues, and the land development business in early nineteenth-century Boston, see Kamensky, *Exchange Artist*. A Rhode Island bank involved in the speculation issued $600,000 in notes based on a capital of only $86.48 (9).
93. Marryat, *Diary in America*, 29.
94. Kamensky, *Exchange Artist*, 17.
95. Ibid., 52–5.
96. Temin, "Industrialization of New England," 149–51.
97. Chandler Jr., *Visible Hand*, 30.
98. Fowler Jr., "Marine Insurance in Boston," 161–2; and Dalzell, *Enterprising Elite*, 93. Needless to say, the Commonwealth came under pressure to allow others to create "State" banks, and after 1792 a number were given charters. By 1837, there were 129.
99. Twenty percent of the shares were owned by the US government, the rest privately held. Notes from "The Great Game: The Story of Wall Street" (CNBC televsion, 2000).
100. Gilje, "Rise of Capitalism," 3.
101. A variation of this same debate went on in 2007–9 between conservatives, mostly from the South, who argued that banks should be allowed to fail as a result of their own

greed and others who felt that this would lead to the collapse of the American and global financial systems.

102. Hamilton's Bank of the United States was federally chartered for twenty years, from 1791 to 1811; the charter was not renewed. A Second Bank was chartered for twenty years in 1816 after the mess of the War of 1812 demonstrated the need for it. Madison had opposed the chartering of the First Bank, and it was during his first term as president that the charter was not renewed. In his second term, he signed the bill creating the Second Bank. The lesson Madison learned was forgotten by the 1830s; see Cathy Matson, "Capitalizing Hope: Economic Thought in the Early National Economy," in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul A. Gilje (Lanham, MD: Rowman & Littlefield, 1997), 124–5; Schlesinger Jr., *Age of Jackson*, 10.

103. Jackson had said before his electionthat he opposed all banks in principle, but later political necessity did not allow him to go that far; see Hamill, "From Special Privilege to General Utility," 98n68.

104. Fox and Remini, *Decline of Aristocracy*, 382–3. The transfer of federal funds out of the United States Bank into State banks only improved their capitalization and made them more vital to entrepreneurs.

105. Hofstadter, "William Leggett," 586.

106. Ibid., 587. In the years since then, it is clear that overleveraging by New York banks remains a problem, imperiling the savings of, among others, retired workers.

107. The law said any twelve landowners in the State could form a banking association, as long as the capital stock subscribed was not less than $50,000 (Dunbar and May, *Michigan*, 223). None of the rules wase enforced, and most of the banks collapsed as the Panic tightened credit. By 1839, only three older banks and four "general charter" banks — out of the forty-nine created in 1837 — remained (237).

108. Schlesinger Jr., *Age of Jackson*, 286; Klein, *Empire State*, 321.

109. It is possible that the use of slaves kept the capital needs of plantations at a minimum, so that banking was needed mostly to facilitate trading and exports.

110. The estimated per capita amount of paper money in circulation rose from $6.69 in 1830 to $13.87 in 1837. The number of banks doubled in the same period (Dunbar and May, *Michigan*, 223; Gordon, *Great Game*, 65–6). One oddity was that the revenues from the purchase of public lands, for speculation or settlement, during this time allowed Jackson to pay off the national debt in 1835 for the only time in history. Another was that, in Michigan at least, the only money circulating in the 1840s was mint coinage in gold and silver (Dunbar and May, *Michigan*, 237).

111. Martin, *Railroads Triumphant*, 337–8.

112. See Gordon S. Wood, "The Enemy Is Us: Democratic Capitalism in the Early Republic," in *Wages of Independence: Capitalism in the Early American Republic*, ed. Paul A. Gilje (Lanham, MD: Rowman & Littlefield, 1997), 147.

113. Quoted in Beatty, *Colossus*, 6.

114. Ibid., 273. The Peruvian economist Hernando De Soto has stated for decades that one of the features of a poor society is the inability of its citizens easily to form companies and go into the production of goods and services.

Chapter 11

1. Lincoln did go to watch a game with his son during the Civil War; see Gerald Astor et al., *The Baseball Hall of Fame 50th Anniversary Book* (Englewood Cliffs, NJ: Prentice-Hall, 1988), 4. Another myth was that Lincoln had summoned Abner Doubleday to his deathbed and implored him to keep the game of baseball alive; see Zev Chafets, *Cooperstown Confidential* (New York: Bloomsbury, 2009), 28.
2. W.P. Kinsella, *Shoeless Joe* (1982; New York: Mariner Books, 1999), 252–3. The novel was the basis for the movie *Field of Dreams*.
3. Sinclair Lewis, *Babbitt* (1922; repr. Mineola, NY: Dover Publications, 2003), 73.
4. Apparently, the colonies accepted the validity of pre-Revolutionary Royal grants, or patents, but it was another thing for diehard Tories to hang on to them when their physical presence place them in jeopardy, at least during the first decade after the end of the war.
5. Taylor, *William Cooper's Town*, 4, 30–5, 44–5, 52.
6. Johnson, *History of the American People*, 412.
7. A short biography of Cooper may be found in Klein, *Empire State*, 353–4.
8. Schlesinger Jr., *Age of Jackson*, 378.
9. Cooper married into a prominent New York family in Westchester County.
10. Schlesinger Jr., *Age of Jackson*, 375–9.
11. Foreman, *Frommer's Comprehensive Travel Guide*, 272–3.
12. Steve Rashin, *Road Swing: One Man's Journey into the Soul of American Sports* (New York: Doubleday, 1998), 60–1, captures the Cooperstown experience. For less-focused tourists, there are a number of interesting attractions in and around the town.
13. Doubleday was a descendant of Connecticut Yankees who migrated to New York, first to New Lebanon and then to the Otsego Lake area. His father was born near Cooperstown and then moved to near Saratoga, where Abner was born. He moved on to Auburn and became a newspaper publisher and congressman. Abner was sent to live with an uncle and attend school in the Cooperstown area. In the Civil War, he was a fairly prominent Union general, who ordered the first Union fire from Fort Sumter.
14. He was at prep school there a couple of years earlier; see, especially, Peter Morris, *But Didn't We Have Fun? An Informal History of Baseball's Pioneer Era, 1843–1870* (Chicago: Ivan R. Dee, 2008), 226–7.
15. Astor et.al., *Baseball Hall of Fame 50th Anniversary Book*, 1–12.
16. Ibid., 35–7. The claim is still made; see Schlereth, *Victorian America*, 224. There are a number of other claims as to its antiquity, such as a baseball game played in Canada between a team from Beachville, Ontario, and the Zorras, a team from a neighboring township; a newspaper article about a baseball game in lower Manhattan; a 1791 Pittsfield, Massachusetts, ordinance banning baseball from being played near the town square; and various games. and religious rites going back through medieval Spain to classical Egypt.
17. Murphy, *Crazy '08*, 131.
18. Chafets, *Cooperstown Confidential*, 26.

19. From 1813 on, the town trustees, led by Cooper descendants, enacted rules against "rowdies" playing rounders and town ball on its streets and in its fields (Taylor, *William Cooper's Town*, 383–4).
20. "Baseball has a remarkable ability to create myths about itself that endure despite the fact that they wither under the slightest scrutiny (Murphy, *Crazy '08*, 49).
21. Much of the following is adapted from a number of sources, but they are all found in succinct fashion in Morris, *But Didn't We Have Fun?*.
22. Apparently, their favorite field was at Twenty-seventh Street and Madison Avenue (Burrows and Wallace, *Gotham*, 733).
23. A concise, but detailed account of early New York City baseball is in ibid.
24. See, for instance, John Thorn, "Doc Adams," SABR Baseball Biography Project (Phoenix: Society for American Baseball Research, n.d.); available online at http://bioproj.sabr.org/bioproj.cfm?a=v&v=l&bid=%20639&pid=16943.
25. Members came from fourteen clubs at first (Gordon, *Business of America*, 249). A National Association of Professional Baseball Players Association was set up in 1871 (Wish, *Society and Thought in America*, 277).
26. Most of the club's players came from New York City (Burrows and Wallace, *Gotham*, 975).
27. Schlereth, *Victorian America*, 225, ; Burrows and Wallace, *Gotham*, 974.
28. The only mass sport of totally American origin is basketball, created in Springfield, Massachusetts, in 1891 by Dr. James Naismith, a Canadian immigrant working with the Young Men's Christian Association (Wish, *Society and Thought in America*, 279) — well, maybe not totally. The National Basketball Hall of Fame is appropriately located in the town of the sport's birth.
29. This, despite the brother of the then patriarch of the Clark family's violent opposition to the New Deal programs.
30. The model for the naming was based on a 1900 Hall of Fame for Great Americans in New York City, which included a colonnade populated with busts of the inductees (Chafets, *Cooperstown Confidential*, 30).
31. As early as 1917, locals with an eye towards economic development had created a Doubleday Memorial Fund to build a ball field as well as a retirement home for players (ibid., 28).
32. Eldon E. Snyder, "Sociology of Nostalgia: Sport Halls of Fame and Museums in America," *Sociology of Sport Journal* 8 (3, 1991): 228–38.
33. This is just what Mills said about Cooperstown later. Chafets (*Cooperstown Confidential*, 8, 27) refers to the town as an "American Brigadoon."
34. Levi, *American Vertigo*, 27–8.
35. Chafets, *Cooperstown Confidential*, 4–5. Cooperstown attracts about 350,000 tourists each year.
36. Michael Patrick Allen and Nicholas L. Parsons, "The Institutionalization of Fame: Achievement, Recognition and Cultural Consecration in Baseball," *American Sociological Review* 71 (5, 2006): 808.
37. Seymour Martin Lipset, *American Exceptionalism: A Double-Edged Sword* (New York: W.W. Norton, 1996), 19. The others are liberty, egalitarianism, populism, and *laissez-faire*.

38. Lipset would disagree, seeing individualism as the basis for the American propensity to form voluntary organizations (ibid., 276–8).
39. Rashin, *Road Swing*, 187.
40. He was caught between a love for wilderness and a recognition that advancing civilization would overcome it (Stegner and Stegner, *Marking the Sparrow's Fall*, 123).
41. Slotkin, *Regeneration through Violence*, 467–8, 512; idem, *Gunfighter Nation*, 16; Stegner and Stegner, *Marking the Sparrow's Fall*, 123.
42. Stegner and Stegner, *Marking the Sparrow's Fall*, 200.
43. Lewis, *Babbitt*, 108.
44. Stegner and Stegner, *Marking the Sparrow's Fall*, 199–-200.
45. Francis Parkman wrote of Hawkeye: "There is something admirably felicitous in the conception of this hybrid offspring of civilization and barbarism, in whom uprightness, kindliness, innate philosophy and truest moral perceptions are joined with the wandering instincts and hatred of restraint which stamp the Indian or Bedouin"; quoted in Slotkin, *Regeneration through Violence*, 512.
46. See Slotkin, *Regeneration through Violence*, 294.
47. David Brooks notes that turnover in plants in the early 1900s often topped 100 percent per year and that the average worker moved to a new job every three years or so. The rate might be lower now, but it is still high. Brooks attributes this not to the nature of the job, but to the aspirations of the worker: perhaps a different job would be more satisfying or present a new opportunity; see David Brooks, *On Paradise Drive: How We Love Now (And Always Have) in the Future Tense* (New York: Simon & Schuster, 2004), 232.
48. See, for instance, a later edition, *Smolensk under Soviet Rule* (Boston: Unwin Hyman, 1989).
49. Jon R. Katzenbach and Douglas K. Smith, "The Wisdom of Teams," *Small Business Reports* 18 (7, 1993): 68–71.
50. Ibid.
51. Even among those Hall of Fame players who played in major markets, with presumably major amounts of cash to buy the best talent, almost 15 percent never played in a single World Series game (Allen and Parsons, "Institutionalization of Fame," 817).
52. Michael Lewis, *Moneyball: The Art of Winning an Unfair Game* (New York: W.W. Norton, 2004), 37–8.
53. Ibid., 287–301.
54. Ibid., 34.
55. James's analysis of baseball statistics led him into rank heresy. As Lewis puts it, "[t]he statistics were not merely inadequate: they lied. And the lies they told led the people who ran major league baseball teams to misjudge their players and mismanage their games" (ibid., 67).
56. Apparently, the Boston Red Sox used a similar approach in building the team that broke "Babe Ruth's curse" and in 2004 brought a World Series Championship to Boston after eighty-six years.
57. It might be that the value of a star has more to do with drawing power — that is, the star's presence increases attendance receipts and television receipts. In 1927, Babe Ruth's quest for the home-run record is said to have added a million dollars to American League receipts (Wish, *Society and Thought in America*, 451). Ken Burns's film, *The Tenth Inning*, notes how the steroid-fueled home-run hitters of the late 1990s were responsible

for raising revenue after the disastrous strike in 1994. Likewise, in basketball, see Ira Boudway, "A Problem Like LeBron," Bloomberg *Business Week*, June 21–27, 2010, 7–9.

Chapter 12

1. Wershler-Henry, *Iron Whim*, 243; and Setterberg, *Roads Taken*, 13. Capote apparently loved to repeat this wisecrack when the opportunity presented itself.
2. Freiberger and Swaine, *Fire in the Valley*, xv.
3. During the 1800s in upstate New York, there was a trend to name towns and cities after classical places, such as Troy, Rome, Utica, Syracuse, Palmyra, and Rochester, to name a few. Local citizens wanted to name the town after Remington, when the Post Office pressed for an official name in 1843, but Eliphalet II refused, and Ilium, the alternate name for the classic city of Troy, was chosen. The Post Office misspelled it and it became officially Ilion (Berstein, *Wedding of the Waters*, 262).
4. The nineteenth-century Remington story largely follows an account in George Hardin, ed., *A History of Herkimer County* (Syracuse, NY: D. Mason, 1893), 204–7; available online at http://www.herkimer.nygenweb.net/remington/remingtonfam5.html.
5. The first innovation acted to improve the range of guns by cutting spiral grooves in their barrels so that the shot had a spin as it left the barrel. The term "musket" was replaced by "rifle" as that practice caught on. Accuracy demanded that the rifle fire a shot that was propelled by a standard amount of powder and that had less air resistance as it went toward its target. "Cartridges" and "bullets" thus replaced "powder" and "balls" in the firearm lexicon.
6. William Least Heat-Moon describes the town and its industry as he passes through on his boat, "River-Horse"; see Least Heat-Moon, *River Horse: A Voyage Across America* (New York: Houghton Mifflin, 1999), 46–7.
7. Chandler Jr., *Visible Hand*, 308.
8. There is considerable literature on the sewing machine. A short piece that relates to interchangeable parts and the production of complex mechanisms is in Harlick, *No Place Distant*, 148–53.
9. Ibid., 308–9.
10. In the 1920s, an Underwood machine contained 3,200 parts, according to the obituary of a famous typewriter customizer and repairman; see "Martin Tytell," *Economist,* September 20, 2008, 106.
11. See How Products Are Made, "Christopher Latham Sholes Biography (1819–1890)"; available online at http://www.madehow.com/inventorbios/13/Christopher-Latham-Sholes.html.
12. Schlereth, *Victorian America*, 69.
13. Wershler-Henry, *Iron Whim*, 70–1; and Torbjorn Lundmark, *Quirky QWERTY: A Biography of the Typewriter & Its Many Characters* (New York: Penguin, 2002), 11.
14. It took ten years before this design feature was changed (Lundmark, *Quirky QWERTY*, 15; see also Wershler-Henry, *Iron Whim*, 71. The design that was to be used throughout

the twentieth century was largely standardized by 1900 and featured a businesslike black metal frame and black keys with white lettering. Fashionable coloring and portability would creep in over the century. See Schlereth, *Victorian America*, 69.

15. Lundmark, *Quirky QWERTY*, 16.
16. Diamond, *Guns, Germs, and Steel*, 248; and Wershler-Henry, *Iron Whim*, 273.
17. The product's third version, the Remington II, was a success in 1881 (Chandler Jr., *Visible Hand*, 308).
18. Ibid.
19. See Lisa K. Slaski, "The Remington Family and Works of Ilion, NY" (2001); available online at http://www.herkimer.nygenweb.net/remington/remingtonfam5.html.
20. Eliphalet Remington III apparently made his fortune in the Canadian West. At the start of the 1900s, he lived on a "substantial and innovative" farm near the village of Cazenovia, near Syracuse. He retired there to build model boats and summer cottages around Cazenovia lake (Hugill, *Upstate Arcadia*, 142).
21. "How we cling to clickety-clack," *Guardian*, May 6, 2011, 31
22. Wershler-Henry, *Iron Whim*, 134.
23. Lundmark, *Quirky QWERTY*, 12.
24. Many of the early attempts were made to emboss letters so that the blind could read (ibid., 13). It is interesting how many communications innovations were made with the motivation of helping the disabled.
25. Wershler-Henry, *Iron Whim*, 35. The keyboard, so vital to typewriters and computers, was developed and used by those involved in telegraphy some twenty-five years earlier (Oliver, *History of American Technology*, 440).
26. Wershler-Henry, *Iron Whim*, 41, 65.
27. Lundmark, *Quirky QWERTY*, 12.
28. Wershler-Henry, *Iron Whim*, 66.
29. Sholes received a patent in 1868, a few months before another person patented a typing ball-based concept, a precursor to the IBM Selectric machine a century later. Oddly enough, he received his first patent for a second model using piano keys, before getting approval for his fist model, which used telegraph keys (ibid., 63-4, 68).
30. Ibid., 67.
31. How Products Are Made, "Christopher Latham Sholes Biography (1819–1890)" ; see also Wershler-Henry, *Iron Whim*, 68.
32. Lundmark, Quirky QWERTY, 14; Wershler-Henry, *Iron Whim*, 68.
33. Apparently, the company wished to order a large number of machines, as it dealt in a large volume of words (370 million in 1869) to be transmitted at speed. Western Union did not want to make them, however, so Sholes and Densmore eventually contacted the Remington Company. The half-sold Western Union must have been an appealing incentive for Remington (Oslin, *Story of Telecommunications*, 202).
34. It apparently did contain the seeds of what would much later become the electric typewriter.
35. Wershler-Henry, *Iron Whim*, 70.
36. See, for instance, Kevin Laurence, "The *Exciting* History of Carbon Paper!" (1995); available online at http://www.kevinlaurence.net/essays/cc.php.
37. Wershler-Henry, *Iron Whim*, 135.
38. Sampson, *Company Man*, 56–8.

39. Wershler-Henry, *Iron Whim*, 136.
40. Ibid., 149. The connection between time-and-motion studies and typewriters and computers is reinforced by the fact that Charles Babbage, the developer of early computer models in the 1830s, is considered the father of operational analysis — jargon for time-and-motion studies — as well as having written the first text on the subject in 1832 (Rowland, *Spirit of the Web*, 219).
41. Quoted in Wershler-Henry, *Iron Whim*, 80.
42. Sampson, *Company Man*, 58.
43. Wershler-Henry, *Iron Whim*, 85–7; Schlereth, *Victorian America*, 69.
44. Wershler-Henry, *Iron Whim*, 262–3.
45. Ibid., 231–2.
46. The first typewriter sales outlet was apparently in New York City (Lundmark, *Quirky QWERTY*, 10).
47. Wershler-Henry, *Iron Whim*, 226–8.
48. Lundmark, *Quirky QWERTY*, 15; Least Heat-Moon, *River Horse*, 47.
49. The poet Allen Ginsberg claimed Kerouac could do 110 to 120 words per minute; see myTypewriter.com, "Jack Kerouac 1922–1969" (2006); available online at http://www.mytypewriter.com/authors/featured/kerouac.html.
50. Wershler-Henry, *Iron Whim*, 238.
51. Ibid., 240–1.
52. Ibid., 239.
53. Klein, *Empire State*, 559.
54. See "James Rand, Jr.," *Wikipedia: The Free Encyclopedia*; available online at http://en.wikipedia.org/wiki/James_Rand,_Jr., accessed January 8, 2014.
55. Wershler-Henry, *Iron Whim*, 253–6.
56. Freiberger and Swaine, *Fire in the Valley*, 9. The naming sequence here seems a bit garbled relative to other sources on this corporate history.
57. Patton, *Open Road*, 15; Rowland, *Spirit of the Web*, 271.
58. Engelbart and others around him recognized where Moore's Law would take them in terms of ever-cheaper computing power.
59. Rosegrant and Lampe, *Route 128*, 171–2.
60. Freiberger and Swaine, *Fire in the Valley*, 24–5, 77.
61. The individuals who could get their hands on minicomputers were university students who were assigned time on those purchased for training and research (Rowland, *Spirit of the Web*, 281).
62. Freiberger and Swaine, *Fire in the Valley*, 27.
63. Wershler-Henry, *Iron Whim*, 273.
64. Cringely, *Accidental Empires*, 80–92.
65. Sampson, *Company Man*, 190.
66. John Markoff, *What the Dormouse Said: How the Sixties Counterculture Shaped the Personal Computer Industry* (New York: Viking, 2005), 248.
67. Cringely, *Accidental Empires*, 91.
68. Jim Cullen, *The Art of Democracy: A Concise History of Popular Culture in the United States* (New York: Monthly Review Press, 1996), 136.
69. Earls, *Route 128*, 100.
70. Ibid., 8.

71. The most famous spinoff in the valley was that of the "traitorous eight," engineers who left Shockley to found the dominant chipmaker, Intel.
72. A version of the story in the preceding paragraphs can be found online at http://www.netvalley.com/.
73. Lampe, *Massachusetts Miracle*, 214, 243. There is now a lot of similar employment elsewhere, as the "computer industry" has come to include a variety of activities formerly in other industry groups, especially in the information sector. It is hard to distinguish Google's advertisement system from those in the traditional advertising industry, for instance; see Paul Krugman, "The Future of New England," in *Engines of Enterprise: An Economic History of New England*, ed. Peter Temin (Cambridge, MA: Harvard University Press, 2000), 273.
74. Lampe, *Massachusetts Miracle*, 243, 244.
75. Ibid., 244.
76. Ibid., 266.
77. Rosegrant and Lampe, *Route 128*, 127.
78. Data General, a 1968 spinoff from DEC, had an organizational culture that resembled that in California, but it was the exception; Tracy Kidder describes it in his *Soul of a New Machine* (New York: Avon Books, 1981). See also Sampson, *Company Man*, 187.
79. As an example, the response of the chip business in Silicon Valley to a Japanese "invasion" around 1980 was more dynamic and aggressive than that of Route 128 to the development of the PC (Sampson, *Company Man*, 198).
80. The parallel between Ford and Gates is made in Cringely, *Accidental Empires*, 98–104.
81. Ibid., 53. A French microcomputer, the "Micral," appeared about a year before the Altair 8800 (Freiberger and Swaine, *Fire in the Valley*, 196.
82. BASIC allowed for the translation of English-language commands into digital instructions that the computer could follow (Rowland, *Spirit of the Web*, 282–3).
83. Freiberger and Swaine, *Fire in the Valley*, 77.
84. It was not their first venture together. Apparently, they had made and sold telephone-hacking "blue boxes" in Berkeley before this (Markoff, *What the Dormouse Said*, 272).
85. Rowland, *Spirit of the Web*, 284.
86. Freiberger and Swaine, *Fire in the Valley*, 140.
87. Oddly enough, until it caught on with the wider public, the fully loaded version cost about $3,000 and its first programs — a spreadsheet and a database program — were aimed at the business market (Cringely, *Accidental Empires*, 62–4).
88. Rowland, *Spirit of the Web*, 286.
89. Freiberger and Swaine, *Fire in the Valley*, 277.
90. Ibid., 276–7, 314.
91. Rowland, *Spirit of the Web*, 287.
92. Freiberger and Swaine, *Fire in the Valley*, 314.
93. Cringely, *Accidental Empires*, 166–77.
94. See ibid. (119–38) for the story of how IBM and Microsoft found each other. IBM failed to appreciate the value of the integrated circuit and did not tie down Intel. The combination of Microsoft Windows software and Intel chips, "Wintel," went on to dominate the computer market.
95. Rowland, *Spirit of the Web*, 283.

96. Eventually Microsoft offered its proprietary versions of these and other business-related programs as a suite, or single package, making life impossible for single-application competitors.
97. See, for instance, Leander Kahney, *The Cult of Mac* (San Francisco: No Starch Press, 2004); Rowland, *Spirit of the Web*, 291.
98. Freiberger and Swaine, *Fire in the Valley*, xv.
99. Even the microcomputer industry on Route 128 had its share of the counterculture. Data General, founded by DEC employees in 1968, was led by an Amherst guitar-playing temporary dropout who became a computer engineer partly to escape the draft and Vietnam (Sampson, *Company Man*, 188).
100. Markoff, *What the Dormouse Said*, chap. 5.
101. Apparently, the first ecommerce transaction took place between Stanford and MIT students in 1971 or 1972. An undetermined amount of marijuana was exchanged between them (ibid., 109).
102. Ibid., 165.
103. Brand was one of the video cameramen who helped Engelbart put on his presentation in December 1968 (Markoff, *What the Dormouse Said*, 152). The Portola Institute also published Ted Nelson's *Computer Lib* (Freiberger and Swaine, *Fire in the Valley*, 77).
104. Freiberger and Swaine, *Fire in the Valley*, 77.
105. Ibid., 124.
106. Ibid., 77.
107. Rowland, *Spirit of the Web*, 282.
108. It was no coincidence that, in the film, the song HAL 9000, the spacecraft computer sang as he was shut down was "Daisy Bell." This was the first song ever played by a computer, done at the Bell Labs around 1960 (Freiberger and Swaine, *Fire in the Valley*, 160–1). The song was written in 1892 by Harry Dacre, an Englishman, who was challenged to write a song that included a reference to a bicycle.
109. The quote is attributed to Silicon Valley venture capitalist John Doerr in Markoff, *What the Dormouse Said*, 197.

Chapter 13

1. See "The Skinner and Webb Families" (2008); available online at http://www.skinnerwebb.com.
2. Quoted in Theodore Steinberg, *Slide Mountain, or the Folly of Owning Nature* (Berkeley: University of California Press, 1995), 157, 159.
3. Mazlish (*Railroad and the Space Program*, 76) gives it as 40 percent; Berstein (*Wedding of the Waters*, 350) estimates it at 33 percent in 1850.
4. Hawke, *Nuts and Bolts of the Past*, 128–9.

5. The phrase apparently began with a toast made at the annual dinners of the New England Society of the City of New York after its creation in 1805 (Berstein, *Wedding of the Waters*, 337).
6. Ibid., 350–1.
7. Though the National Road was extended across Ohio, Indiana, and Illinois, this segment was overshadowed by the speed and cost savings of the Ohio River; see James E. Davis, *Frontier Illinois* (Bloomington: Indiana University Press, 1998), 220.
8. Billington, *Westward Expansion*, 290–1.
9. Attempts to gain large tracts and "flip" pieces of them to others for a quick profit generally proved to be financial failures. Only subdivision, patient sales, and development worked, though even then the prices could not reflect potential demand because of the existence of cheap land in the territories farther west (Hugill, *Upstate Arcadia*, 18–19).
10. The Dutch were able to pay in cash and got better terms than the local speculators, who needed credit to buy (ibid., 33–5). Cazenove apparently had been advised by Robert Morris, Congress's Secretary of Finance during the Revolution and one of the largest landowners in New York, to buy the tract. Morris also advised the Pulteney Associates to buy their tract near the Finger Lakes and the Holland Land Company to make its purchase of virtually the whole of far-western New York (18–19).
11. Ibid., 38; there is some suspicion that the Dutch actually transferred ownership of some of the Cazenovia tract to Talleyrand for his services (85).
12. Billington, *Westward Expansion*, 247.
13. The canal drastically lowered shipping costs and thereby increased the value of farm land. A ton-mile cost from Buffalo to New York City declined from 19 cents to 2 cents between 1817 and the 1830s (Davis, *Frontier Illinois*, 224).
14. Hugill, *Upstate Arcadia*, 35–40.
15. One of Lincklaen's major complaints was the continual tendency of his buyers to move on from their half-cleared lands and sell to others — people he might have wanted as his own buyers.
16. Russell A. Grills, *Upland Idyll: Images of Cazenovia, New York, 1860–1900* (Albany: New York State, Office of Parks & Historic Preservation, 1993), 30. Much of the material in the following section is based on this source.
17. Hugill, *Upstate Arcadia*, 11.
18. Billington, *Westward Expansion*, 244. Some Yankees had moved into New York as early as the 1750s, though not in great numbers, especially into disputed lands along the western Massachusetts border (Klein, *Empire State*, 160).
19. Burrows and Wallace, *Gotham*, 20; Taylor (*William Cooper's Town*, 5) puts the 1820 population at 1.37 million, making it the most populous State.
20. Only around Geneseo, in western New York, was a family that purchased a large tract in the 1790s able to attract renters and manage to hold on to its land through the twentieth century (Hugill, *Upstate Arcadia*, 19).
21. Hernando de Soto, *The Mystery of Capital: Why Capitalism Succeeds in the West, but Fails Everywhere Else* (New York: Basic Books, 2000).
22. Cooper noted in 1786, as he began to sell land, that "the land appears to be, take it altogether, Pretty good, but will not Sell for cash, tho at Ever So Low A Price, but have Plenty of Applications, but they have no money nor Provisions." Most of his early buyers

were clusters of poor "hill Yankees" from the Berkshires or Vermont; see Taylor, *William Cooper's Town*, 71–2, 90.

23. Much economic activity depended on barter between the farmer and the storekeeper. Even in Puritan times, the store played a central part in the life of a frontier New England community; see Ziff, *Puritanism in America*, 292.
24. Wheat was the product of choice in the markets of America and Europe, so it was the crop first planted, and successive territories took their turns as the nation's premier supplier (Martin, *Railroads Triumphant*, 163).
25. Cooper also used his control over the farmers to press his political convictions on them as voters. In 1792, his tactics backfired when the legislature decided that his area had been intimidated into voting for one gubernatorial candidate and threw out their votes, giving the election to the other (Klein, *Empire State*, 254–5).
26. Taylor, *William Cooper's Town*, 105–6. In the early years of his activities, cattle receipts amounted to three-fifths of all "payments" for his land.
27. "Ashes were silver and gold to the young or poor farmer," according to one settler's son (ibid., 108–10).
28. For many years, Cooper could count on the political support of the Yankee newcomers, but not that of the more established communities to the east of the Otsego tract (ibid., 188–9).
29. He made sure the road bypassed the older villages around Cherry Valley (ibid., 162).
30. Ibid., 107.
31. Ibid., 260. US 20 was known traditionally as the Cherry Valley Pike as it passed through Cazenovia.
32. As well, Williamson founded the first newspaper in the region and the first theatre; Emerson Klees, *People of the Finger Lakes Region, the Heart of New York State* (New York: Friends of the Finger Lakes Publishing, 1995), xv.
33. Taylor, *William Cooper's Town*, 120. This was an idea that had some circulation, as the combination of hurricane devastation in the Caribbean and the uncertainties of sugar supplies during the wars of 1792–95 also interested the Dutch developers of Cazenovia in the same idea (Hugill, *Upstate Arcadia*, 34).
34. Davis, *Frontier Illinois*, 297.
35. "What did this movement westward mean for everyday life? For many, it entailed almost continual transience. Frontier historians calculate that nineteenth-century Westerners moved on average four to five times as adults. Richard Garland, father of novelist Hamlin Garland, aptly represents, in William L. Barney's estimate, an entire generation of Northern farmers. Born into a Maine farm family, Garland clerked for Amos Lawrence in Boston, "went west with his parents on the Erie Canal in 1840, worked as a lumberjack in the forests of the upper Midwest, cleared a 160-acre farm in Wisconsin, marched off to fight for the Union, returned home, sold the farm, and moved to Minnesota, to Iowa, and finally to South Dakota" (Schlereth, *Victorian America*, 13). Not without reason did his son title one of his writings *Main Travelled Roads* (1891).
36. If there were no mill, the farmer and his family would have to grind their own grain by hand with a mortar and pestle. Normally, across the frontier, the miller was entitled to 10 percent of the flour as payment (Davis, *Frontier Illinois*, 109).

37. Ellicott employed two of his brother Andrew's sons as clerks. Both saw action in the War of 1812; see Catharine van Cortlandt Mathews, *Andrew Ellicott: His Life and Letters* (1908; repr. New York: Ralph Roberts, 2001), 183.
38. At the time, there were only 17,000 people in the whole area of western New York, half of whom were children (Berstein, *Wedding of the Waters*, 122).
39. Buffalo had only 2,400 people when the Erie Canal opened in 1825; by 1850, it was the world's largest grain port; see Koeppel, *Bond of Union*, 1, 394.
40. Even in 1800 they were little more than Indian trails (Berstein, *Wedding of the Waters*, 122).
41. Billington, *Westward Expansion*, 248–9.
42. Ellicott settled in Batavia in 1798 and coordinated the survey from there. His team laid out the town in long, narrow lots. In 1801, the first town lot was sold to an Abel Rowe; a school teacher settled soon after. Large-scale land sales started in 1802. See ibid., 249; and Barbara Ann Toal, *Batavia* (Charleston, SC: Arcadia Publishing, 2000), 7–8, 15–19.
43. Billington, *Westward Expansion*, 248–59.
44. Half of them, including Ellicott, fled the area when British forces attacked and burned Buffalo and Black Rock on New Year's Eve, 1813.
45. Ellicott's promotion of the canal involved one of the first land grants to finance a major public transportation work. He persuaded the Company's owners to offer a large tract of land, 100,000 acres, to the State if the canal were built through or near the Company's holdings rather than go into Lake Ontario, with a barge canal around Niagara Falls, as some were advocating; see Mathews, *Andrew Ellicott*, 16–18.
46. His relationship with the canal is documented in Koeppel, *Bond of Union*.
47. Ibid., 144.
48. Ellicott had a political machine in western New York called the "Big Family," which came apart in the face of settler protests over the lack of investment he and the Holland Land Company had made in their area. Ellicott, who had earlier resigned from the Erie Canal commission because of ill health, also was forced to resign as the manager (ibid., 346).
49. The first canal shipping company was opened on the finished portion of the canal in 1820 by two Yankees, and prospered from the start (ibid., 144).
50. In the fall of 1836, William Seward, the future governor of the State and secretary of state under Presidents Abraham Lincoln and Andrew Johnson, was hired by the Holland Land Company to be its manager in Chautauqua County, near the Pennsylvania border. He rented a house near the Buffalo-Erie road and worked at land development for about fifteen months, until the Panic of 1837 hit the area; see Doris Kearns Goodwin, *Team of Rivals: The Political Genius of Abraham Lincoln* (New York: Simon & Schuster, 2005), 78–80.

Chapter 14

1. Quoted in Johnson, *History of the American People*, 119.
2. Quoted in Whitney R. Cross, *The Burned-over District; The Social and Intellectual History of Enthusiastic Religion in Western New York, 1800–1850* (New York: Harper and Row, 1950), 210.
3. J. Wilbur Chapman, *The Life and Work of Dwight Lyman Moody* (1900), chap. 11; available online at http://www.biblebelievers.com/moody/06.html.
4. The term is supposed to have been used first by Finney. An almost-poetic description of the area and its effects can be found in Klees, *People of the Finger Lakes Region*, xvi–xvii. Harold Bloom, *The American Religion: The Emergence of the Post-Christian Nation* (New York: Simon & Schuster, 1992), 191, suggests that California was the late-twentieth-century equivalent of the Burned-over District.
5. A key element in promoting the construction of the Erie Canal was nationalism, fanned by the experience of the War of 1812 and concern over the possible British seizure of the Western US trade through the St. Lawrence River to Europe. The canal was begun in 1817, only two years after Andrew Jackson's victory at New Orleans. The British completed the competing Welland Canal in 1829, four years after the opening of the Erie Canal. See Ronald R. Shaw, *Erie Water West: A History of the Erie Canal, 1792–1854* (Lexington: University of Kentucky Press, 1966), 371–415.
6. The Onondagas still have a strong presence in the area.
7. The canal led to a huge increase in population in the 1820s, albeit from a small base: Syracuse grew by 282 per cent and Utica by 183 per cent; farther west, Rochester grew by 512 per cent and Buffalo by 314 per cent (Klees, People of the Finger Lakes Region, xviii). For a short survey of the canal's development, see Robert H. Smith, *Clinton's Ditch: The Erie Canal, 1825* (Del Mar, CA: C Books, 2006).
8. Klein, *Empire State*, 316.
9. Cross (*Burned-over District*, 67) notes that Syracuse was the prototypical canal [or railroad] town: it did not exist until the canal came, and then mushroomed in size.
10. Cross (ibid., 72) describes the canal towns of Rochester and Utica of the time as manufacturing ones and Syracuse and Buffalo as devoted to commerce.
11. Ibid., 74–5.
12. C-SPAN and Ann Bentzel, *C-SPAN's Traveling Tocqueville's America* (Baltimore: Johns Hopkins University Press, 1988), 32; Pierson, *Tocqueville in America*, 191.
13. See, for instance, Mary Ryan, *Cradle of the Middle Class: The Family in Oneida County, New York, 1790–1865* (New York: Cambridge University Press, 1981). Utica had its first revival in 1813–14 and its last in the depression year of 1838.
14. The Puritans in America were acting out a variation on the English myth that they were the successor to the Jews as the Divinely appointed "Chosen People," popularized in Elizabethan times by John Foxe's *Book of Martyrs*. It continues to be a strain in Americans' thinking about their role in the world (Johnson, *History of the American People*, 20).

15. "Fused" might be too strong a word, as the Puritans were mindful of European states where the church and state were run by the same people. Instead, they opted for different people in civil and church governance. It was expected that both would be drawn from among believers and both would support each other, but remain separate to a degree (Ziff, *Puritanism in America*, 52).
16. Brown, *Massachusetts*, 60–1.
17. But not so quickly that New England could not put its stamp on the myth of American origins. Edmund Morgan noted that, "[l]ong before 1860 New Englanders laid claim to the national consciousness and gave their own past as a legacy to the nation, whether it wanted it or not"; quoted in Wills, *Head and Heart*, 75.
18. The Halfway Covenant was a modification of the rule that only "converted" — or "born-again," as we would say today — people could be full members of the church. It allowed sons and daughters of the converted membership in anticipation of their own conversions. Massachusetts pastors resisted this reform in large part, while Connecticut ones adopted it. The Halfway Covenant had been prompted by a letter from King Charles II to Massachusetts informing the Puritans that they could no longer restrict the vote to full church members nor reserve the Lord's Supper to consciously saved members. See, for instance, Jon Butler, *Awash in a Sea of Faith: Christianizing the American People* (Cambridge, MA: Harvard University Press, 1990), 63; Conforti, *Saints and Strangers*, 102; and Wills, *Head and Heart*, 21.
19. Bailyn, *Voyagers to the West*, 166–89.
20. Butler, *Awash in a Sea of Faith*, 61, 63
21. Wills, *Head and Heart*, 61–4.
22. Butler, *Awash in a Sea of Faith*, 62.
23. See, for instance, Peter N. Carroll, *Puritanism and the Wilderness: The Intellectual Significance of the New England Frontier, 1629–1700* (New York: Columbia University Press, 1969).
24. Ibid., 125, 147, 165, 201–5.
25. Ibid., 215–16.
26. Ibid., 216, 217, 221.
27. Northampton was one of a number of places reluctantly founded by the Massachusetts government, which was caught between wanting a single, compact, holy city, and the personal desires of Puritans to expand into good farmland. In 1653, colonists from both Connecticut and Massachusetts already in the area petitioned that the site would afford "a Comfortable subsistence whereby people may Live and Attend upon god in his holy ordinances without distraction" (Carroll, *Puritanism and the Wilderness*, 122).
28. David Levin, "Edwards, Franklin, and Cotton Mather: A Meditation on Character and Reputation," in *Jonathan Edwards and the American Experience*, ed. Nathan O. Hatch and Harry S. Stout (New York: Oxford University Press, 1988), 43.
29. Conforti, *Saints and Strangers*, 181–2. Butler (*Awash in a Sea of Faith*, 174–7) notes a number of other years in the 1600s and 1700s when revivals happened in New England.
30. Much of the biographical information in this section comes from Alfred Owen Aldridge, *Jonathan Edwards* (New York: Washington Square Press, 1964), 1–66.
31. Johnson, *History of the American People*, 41.
32. The Great Awakening attracted more women than men and more youths than their seniors. As well, New England society was on the edge of population growth that could

not be accommodated within traditional structures, given the lack of good land. Revivals let these second-class people "step out of their place" see Amy Schrager Lang, "'A Flood of Errors': Chauncy and Edwards in the Great Awakening," in *Jonathan Edwards and the American Experience*, ed. Nathan O. Hatch and Harry S. Stout (New York: Oxford University Press, 1988), 170.

33. Roger Finke and Rodney Stark, *The Churching of America, 1776–1990* (New Brunswick, NJ: Rutgers University Press, 1992), 22–3.
34. The first Great Awakening was but the North American version of a transatlantic Awakening; see Ann Taves, *Fits, Trances, and Visions: Experiencing Religion and Exploring Experience from Wesley to James* (New Brunswick, NJ: Princeton University Press, 1999), 20.
35. Finke and Stark, *Churching of America*, 46–53. Whitefield made seven tours of British North America between 1738 and his death in Newburyport in 1770 (Butler, *Awash in a Sea of Faith*, 187).
36. Mark Noll refers to Daniel Pals's observation on this in his *The Scandal of the Evangelical Mind* (Grand Rapids, MI: William B. Eerdmans, 1994), 61–2. See also Butler, *Awash in a Sea of Faith*, 191.
37. A century later, a conservative minister wrote of Finney and his imitators that "[e]very theological vagabond and peddler may drive his bungling trade, without passport or license, and sell his false wares at pleasure"; see Jackson Lears, *Fables of Abundance: A Cultural History of Advertising in America* (New York: Basic Books, 1994), 57.
38. Finke and Stark, *Churching of America*, 51.
39. This term was never used by Edwards or his successors, but was invented a century later in 1842 as the title of a bestseller by Joseph Tracey, *The Great Awakening: A History of the Revival of Religion in the Times of Edwards and Whitefield*; see Johnson, *History of the American People*, 112.
40. There was almost no religious activity, churches, or preachers in the Carolinas before 1700. After this, the Anglican revival began to provide some (Butler, *Awash in a Sea of Faith*, 64, 98, 165–7).
41. Stephen Miller, *The Peculiar Life of Sundays* (Cambridge, MA: Harvard University Press, 2008), 178. See also Louis Menand, *The Metaphysical Club: A Story of Ideas in America* (New York: Farrar, Straus and Giroux, 2001), 62–3. Apparently, the feeling was not quite reciprocated, as Whitefield indicated he was more interested in Edwards's late and famous grandfather (Butler, *Awash in a Sea of Faith*, 179).
42. Whitfield wrote 1,500 sermons, nine volumes of "Miscellanies," and 10,000 separate entries in his "Blank Bible," along with other volumes. Nathan O. Hatch and Harry S. Stout, "Introduction," in *Jonathan Edwards and the American Experience*, ed. Nathan O. Hatch and Harry S. Stout (New York: Oxford University Press, 1988), 4.
43. Noll, *Scandal of the Evangelical Mind*, 77.
44. Wills, *Head and Heart*, 103.
45. See ibid. Ann Taves (*Fits, Trances, and Visions*, 16) notes that there was a division between "formalists," who saw religion as a set of forms that reflected the conclusions of experts and other authorities, and "enthusiasts," who claimed that God could be experienced directly in some manner by individuals.
46. After Edwards had identified himself with Whitefield's work, he later began to criticize it (Wills, *Head and Heart*, 103).

47. This was not a singular occurrence, as many ministers even before 1700 had been given only one-year contracts, which could be renewed or not on the decision of the board (Butler, Awash in a Sea of Faith, 171).
48. Paul Johnson (*History of the American People*, 118) claims it was "the proto-revolutionary event, the formative movement in American history, preceding the political drive for independence and making it possible." Hatch and Stout ("Introduction," 4) note that Timothy Dwight, an eighteenth-century president of Yale University, called Edwards, "that moral Newton, that second Paul."
49. The problem with revivals arose from the kind of social pressure that was exerted on laggards who might have other reasons than religious one for being saved. The nineteenth-century experience of Frederick Olmstead, the developer of Central Park, is useful in this regard; see Rybczynski, *Clearing in the Distance*, 64.
50. Johnson, *History of the American People*, 41.
51. Hatch and Stout ("Introduction," 10) feel that Edwards was America's first post-Millennial theologian.
52. Butler, *Awash in a Sea of Faith*, 195–205.
53. Donald Weber, "The Recovery of Jonathan Edwards," in *Jonathan Edwards and the American Experience*, ed. Nathan O. Hatch and Harry S. Stout (New York: Oxford University Press, 1988), 56–9.
54. Butler (*Awash in a Sea of Faith*, 206) estimates that three-quarters of the Anglican pastors lost their churches. They were also hampered by the fact that an Anglican bishop was never appointed to lead the church in America (Johnson, *History of the American People*, 41).
55. Wills, *Head and Heart*, 7.
56. Ibid., 229–30.
57. Finke and Stark, *Churching of America*, 61.
58. Much of this section on disestablishment in New York is taken from John Webb Pratt, *Religion, Politics, and Diversity: The Church-State Theme in New York History* (Ithaca, NY: Cornell University Press, 1967).
59. Breaking the tie to London cost the American church its British subsidies. The Wesleyans, embarrassed by their founder's support for London, likewise created the American Methodist church.
60. There is an interesting vignette about the failed attempt of some Sabbatarians to operate an Erie Canal transportation company on their religious principles in Paul Johnson, *A Shopkeeper's Millennium: Society and Revivals in Rochester New York, 1815–1837* (New York: Hill and Wang, 1978), 83–8.
61. By 1850, disestablishment tended to arise in a different way: the debate about the relationship between Christianity — in particular, Protestant Christianity — and government came to the fore as a general concept favoring no denomination, but disfavoring Catholic immigrants (Butler, *Awash in a Sea of Faith*, 258–68).
62. This prohibition irritated political and other elites, who sensed that enthusiasm threatened the social order. A Methodist example was John Fanning's 1814 book, *Methodist Error, or Friendly Christian Advice to those Methodists who indulge in extravagant emotions and bodily exercises*. Fanning was a sober and studious Philadelphian who objected to the fits and trances of Methodist camp meetings and other gatherings' see Taves,

Fits,Trances, and Visions, 34, 46, 76–7; and Nathan O. Hatch, *The Democratization of American Christianity* (New Haven, CT: Yale University Press, 1989), 64–6.

63. See Finke and Stark, *Churching of America*, 16, 26. This apparently had been the case during the colonial period as a whole (24).
64. Lears, *Fables of Abundance*, 43.
65. Richard Bassett, a Methodist from Delaware, said nothing while attending the sessions (Wills, *Head and Heart*, 225).
66. De Tocqueville noted the complex relationship between formal religion and spirituality in the West during his visit to Cincinnati on his way south (Pierson, *Tocqueville in America*, 564).
67. Hatch, *Democratization of American Christianity*, 59–60.
68. Finke and Stark, *Churching of America*, 63. The Plan was formally abandoned in 1852, but in the Burned-over District, it had been a dead letter by the 1830s (Cross, *Burned-over District*, 257).
69. Finke and Stark, *Churching of America*, 75.
70. Taves, *Fits, Trances, and Visions*, 71, 84. Hatch (*Democratization of American Christianity*, 81–93) gives a short, but sobering account of Asbury's work and that of the itinerants.
71. Butler, *Awash in a Sea of Faith*, 236–7.
72. Finke and Stark, *Churching of America*, 153. See also Wills, *Head and Heart*, 290–1.
73. Chernow, *Titan*, 19–20.
74. Mormon founder Joseph Smith responded to Free Will Baptist preacher Nancy Towle's criticism of his willingness to lead a new creed and preach with little formal education by saying, "[t]he gift has returned back again, as in former times, to illiterate fishermen" (quoted in Hatch, *Democratization of American Christianity*, 49).
75. Baptist and Methodist preachers might average $60–$100 a year in salary, while the Congregationalists and Presbyterians, better educated, could command between $400 and $3,000. The latter were either subsidized by the missionary societies or gravitated to larger settlements and toward the better-off people in the community (Finke and Stark, *Churching of America*, 82).
76. Ibid., 75–6.
77. Butler, *Awash in a Sea of Faith*, 280–1. One of the most prominent from 1815 to 1832 was Nancy Towle, a Free Will Baptist preacher of Yankee origin, who even preached before Congress. Most of the other women preachers of the time were also Yankees (345n44). Hatch (*Democratization of American Christianity*, 79) discusses Towle's influence; see also Cross, *Burned-over District*, 177.
78. There was a great revival as early as 1771 at Cub Creek, Virginia, just south of Appomattox. The date suggests that revivals spread with the migration of the Scots-Irish, especially given that the best record of this particular revival was by a Presbyterian, Caleb Wallace (Taves, *Fits, Trances, and Visions*, 86).
79. Even political campaign styles were affected by revival techniques (Wills, *Head and Heart*, 293–4). Bloom (*American Religion*, 59–63) describes much of the emotional reactions at Cane Ridge and similar meetings. Much later, and in a secular way, the 1969 Woodstock rock festival took on many aspects of a nineteenth-century camp meeting. See also Andrews, *People Called Shakers*, 137–9.
80. Hatch (*Democratization of American Christianity*, 6) attributes the idea to Robert Wiebe.

81. The proportion who are adherents seems to have plateaued for the past sixty years at 59 to 62 percent (Wills, *Head and Heart*, 8).
82. Finke and Stark, *Churching of America*, 54–6.
83. Bloom, *American Religion*, 64.
84. Emerson Klees lists ten new religions, sects, and communes established in the Burned-over District; see *The Crucible of Ferment: New York's "Psychic Highway"* (New York: Friends of the Finger Lakes Publishing, 2001), 10–12.
85. Quoted in Hatch, *Democratization of American Christianity*, 32.
86. One can see this indirectly through sex ratio statistics. Massachusetts (without Maine), Rhode Island, and Connecticut all had ratios of 96 to 98 males for every 100 females; males, generally younger ones, were on the move west. See Finke and Stark, *Churching of America*, 33–5, who also note there was an almost perfect negative correlation between a high male-to-female ratio and rates of religious adherence — the frontier was unchurched and irreligious, at least until the "nice" women arrived (35).
87. The model for these societies seems, ironically, to have been the Society for the Propagation of the Gospel in Foreign Parts (1701), an Anglican organization that began to improve that church's fortunes in the South before the Revolution (Butler, *Awash in a Sea of Faith*, 234). In 1798, the General Assembly of the Congregationalists in Connecticut authorized the creation of a missionary society to work in the West. It was run by two ministers residing in the West along with one from Vermont. In 1826, the American Home Missionary Society was created to support the Christianization of Yankee lands in New York and beyond (Finke and Stark, *Churching of America*, 64–5). Its primary work was to send out missionaries and to subsidize settled ministers where the population was sparse. For an account of its activities in western New York, see Cross, *Burned-over District*, 188–90.
88. In 1831, de Tocqueville noted the nature of the itinerant Methodist preachers and the general religiosity of the people in Ohio (Pierson, *Tocqueville in America*, 564).
89. See the observations made about the Congregationalists in Finke and Stark, *Churching of America*, 40–1.
90. Ibid., 74.
91. Klein, *Empire State*, 222, 282.
92. Menand, *Metaphysical Club*, 80. Finney notes in his autobiography that he spent six weeks to two months in Buffalo after leaving Rochester in the spring of 1831, and then spent the fall of that year in Providence and Boston when de Tocquevlle would have passed through there, so it is unlikely that the French commentator on American values was unaware of his work. An interesting account of the effect of "enthusiastic" revivals on Rochester is given in Johnson, *Shopkeeper's Millennium*.
93. Cross, *Burned-over District*, 67.
94. As Cross (ibid., 82) says, "[f]or whatever reason, the New York descendants of the Puritans were a more quarrelsome, argumentative, experimenting brood than their parents and stay at home cousins."
95. Ibid., 187–8.
96. Wills, *Head and Heart*, 57–61.
97. Millennialism is not an uncommon sentiment. St. Paul reassured early Christians that they would see the end of the world. The early believers in the Koran in the 700s were convinced by some of its passages that the world would end very soon; see Malise

Ruthven, "The Birth of Islam: A Different View" *New York Review of Books*, April 7, 2011, 82. The Puritans as well felt that the "end time" was near (Wills, *Head and Heart*, 33–4. One commentator has noted, "[b]y 1815, Americans were 'drunk on the millennium'"; see Leonard I. Sweet, *The Evangelical Tradition in America* (Macon, GA: Mercer University Press, 1984), 114. The Mormons also have some Millennial flavor, as evidenced in their formal title of the Church of Jesus Christ of Latter-day Saints. Cross devotes a chapter to the Millerites and other Millennialists; see *Burned-over District*, chap. 17.

98. A different group in Britain, the Irvingites, had no better luck with their predictions of the end of the world in 1835, revised to 1838; see Hobsbawm, *Age of Revolution*, 228.
99. The main group migrated west to Battle Creek, Michigan, where John H. Kellogg created a cereal industry/health food empire (Johnson, *History of the American People*, 303–5.
100. Cross (*Burned-over District*, 79–80) argues that Millennialism, of the pre- or post- variety, is a reflection of American optimism.
101. Sweet, *Evangelical Tradition in America*, 37.
102. Bloom (*American Religion*, 65) notes: "Cane Ridge and the following Southern camp meetings were more spectacular manifestations than the individual revivalist events of the Burned-over District, but the Southerners were far surpassed in Gnostic intensity and Enthusiastic zeal for Millennial innovation by the transplanted children of the Puritan tradition." See also Dunbar and May, *Michigan*, 299. Cross (*Burned-over District*, 79–80) calls social perfectibility the "holy enterprise of minding other people's business," and notes it is a continuing feature of American society.
103. Cross, *Burned-over District*, 113–35.
104. The publication and subsequent popularity of Harriet Beecher Stowe's Uncle Tom's Cabin in 1852 resonated among the "saved" of the North. It helped that she was the daughter of a Yankee Congregational preacher who had moved to Cincinnati and the wife of another preacher; see McPherson, *Battle Cry of Freedom*, 88. Slotkin (*Regeneration through Violence*, 441–3) notes how the early Puritan "captivity" myth was adapted by abolitionist writers such as Stowe to add to the moral indignation about slavery.
105. Cross (*Burned-over District*, 217–26) gives an account of the rise of abolitionism.
106. Ibid., 168.
107. For an account of the rise of temperance movement in western New York, see ibid., 213–17. Temperance activists also felt that coffee, tea, and tobacco were wrong, but eventually fixed on alcohol as the single cause. The Mormons later picked up on part of this.
108. Sweet, *Evangelical Tradition in America*, 57–66.
109. Cross, *Burned-over District*, 85–8.
110. Cullen, *Art of Democracy*, 76.
111. Hurt, *Ohio Frontier*, 289.
112. See Camp Meeting (Dot) Org, "What Is a Camp Meeting?" (n.d); available online at http://www.campmeeting.org/whatis.htm.
113. Wish, *Society and Thought in America*, 87.
114. The reaction of the official church to this format resulted in the founding of the Primitive Methodist church.

115. Menand, *Metaphysical Club*, 188.
116. Ibid.
117. Hatch (*Democratization of American Christianity*, 20, 125, 128–32) relates a couple of stories about Dow's preaching. Dow gave at least one saying to the American lexicon, describing Calvinism as: "You can and you can't, You will and you won't, You'll be damned if you do, And you'll be damned if you don't."
118. Butler, *Awash in a Sea of Faith*, 241; see also Hatch, *Democratization of American Christianity*, 34–40.
119. She wrote a book entitled *Vicissitudes in the Wilderness* that was still in print after Dow died. Following him, the reality of her vicissitudes can only be imagined.
120. Much of this section depends on Charles G. Finney, *Charles G. Finney: An Autobiography* (Westwood, NJ: Fleming H. Revell, 1876, 1908). See also Klein, *Empire State*, 330–1; and Cross, *Burned-over District*, 152–175.
121. Finney, *Charles G. Finney*, 4.
122. Hatch (*Democratization of American Christianity*, 195) claims Finney transferred Methodist techniques to Presbyterianism.
123. Sweet, *Evangelical Tradition in America*, 139.
124. Cross, *Burned-over District*, 185.
125. Johnson, *Shopkeeper's Millennium*, 109. As a post-Millennialist, Finney noted that, "if they were united all over the world, the Millennium might be brought about in 3 months."
126. Sweet, *Evangelical Tradition in America*, vii. A Finney Festival was held in Rochester in October 1981, one hundred and fifty years after the revival.
127. Finney noted: "In New England, I have found a high degree of general education, but a timidity, a stiffness, a formality and a stereotyped way of doing things, that has rendered it impossible for the Holy Spirit to work with freedom and power." A New York preacher friend commented to him in Hartford, "Why, Brother Finney, your hands are tied [here], you are hedged in by their fears and by the stereotyped way they do everything. They have even put the Holy Spirit in a strait-jacket." See Finney, *Charles G. Finney*, 439.
128. Lears, *Fables of Abundance*, 56. By 1835, he was attacking Calvinist ideas in New York City (Hatch, *Democratization of American Christianity*, 197). He wanted religious life to be audience-centered, not clergy-centered.
129. Sweet, *Evangelical Tradition in America*, 33–9.
130. Much of the biographical information in this section comes Chapman, *Life and Work of Dwight Lyman Moody*, although it is a rather disorganized work. A capsule professional biography can be found in Wills, *Head and Heart*, 342–8. There is a considerable literature on Moody's life and career.
131. By the 1850s, about one-third of Americans had some kind of religious affiliation, but this number was lower in the cities (Butler, *Awash in a Sea of Faith*, 294).
132. The spread of full-time, settled Methodist clergy followed settlement in the West, growing from one-third of the Methodist preachers in 1843 to one-half in 1882. The average length of tenure in one church increased from two years in 1804 to three years in 1864 to five years in 1888 (Finke and Stark, *Churching of America*, 154). By the 1850s, Methodists were noting the institution of pew rentals and ministers with some formal education. Complaints were raised when the majority of Methodist clergy in the Burned-

over District were subjected to the church's hierarchy and discipline, much as happened to the Congregationalists a century earlier, resulting in the formation of the Free Methodists in 1860 (150–2).

133. Wills, *Head and Heart*, 341–2.

134. If one wanted to consider Jonathan Edwards and Methodist bishop Francis Asbury in this line, he could be seen as part of a fifth generation, dating back to the 1730s.

135. Chapman, *Life and Work of Dwight Lyman Moody*, chap. 6.

136. Wills (*Head and Heart*, 346) quotes him as saying, "I look upon this world as a wrecked vessel. God has given me a lifeboat and said to me, 'Moody, save all you can'."

137. Quoted in Marshall W. Fishwick, *Great Awakenings: Popular Religion and Popular Culture* (New York: Haworth Press, 1995), 37.

138. An interesting modern, yet timeless, description of evangelist logic is Robert D. Kaplan, *An Empire Wilderness: Travels into America's Future* (New York: Random House, 1998), 278–80. See also Noll, *Scandal of the Evangelical Mind*, 61.

139. Hatch, *Democratization of American Christianity*, 213.

140. Ibid., 81.

141. Bloom, *American Religion*, 15.

142. Maynard, *Walden Pond*, 63.

143. Henry F. May, "Jonathan Edwards and America," in *Jonathan Edwards and the American Experience*, ed. Nathan O. Hatch and Harry S. Stout (New York: Oxford University Press, 1988), 30.

144. Weber, "Recovery of Jonathan Edwards," 64–5.

145. Bloom, *American Religion*, 25. Bellah et al. interviewed a woman identified as Shiela who espoused a religion she called "Shielaism" — the principle of which was "Try to love yourself and be gentle with yourself" — which the authors say was not uncommon in 1980s America and was are related to the Puritan Ann Hutcheson's ideas, which got her expelled to Rhode Island and then to Long Island in the mid-1600s. See Robert N. Bellah et al., *Habits of the Heart: Individualism and Commitment in American Life* (New York: Harper and Row, 1985), 221.

Chapter 15

1. John Locke, *Second Treatise of Civil Government*, 1690, chap. II.
2. William Blackstone, *Commentaries on the Laws of England, 1765–69*, Book I, chap. 15, section III. Blackstone's *Commentaries* constituted the basic document used to train lawyers and guide judges throughout the first century and more of an independent America.
3. Neall was introducing the Hutchinson Family Singers to Lucretia Mott. The Singers were one of the most popular entertainment acts of the 1840s, featuring themes about abolition, temperance, labor concerns, and women's rights in their music; see "Hutchinson Family Singers," *Wikipedia: The Free Encyclopedia*; available online at

http://en.wikipedia.org/wiki/Hutchinson_Family_Singers, accessed January 9, 2014. See also Otelia Cromwell, *Lucretia Mott* (Cambridge, MA: Harvard University Press, 1958), 97.

4. Deliberately patterned after Jefferson's Declaration of Independence, this is part of the Declaration of Sentiments adopted at the 1848 Seneca Falls Women's Rights Convention; see, for example, Fordham University, "Modern History Sourcebook: The Declaration of Sentiments, Seneca Falls Conference, 1848"; available online at http://www.fordham.edu/halsall/mod/Senecafalls.html.
5. The canal has been referred to as a "psychic highway" between New England and its "colonies" to the west; see E. Keith Melder, *Beginnings of Sisterhood: The American Woman's Rights Movement, 1800–1850* (New York: Schocken Books, 1977), 146.
6. Peggy A. Rabkin notes that this was the conclusion of Stanton, Anthony, and others in their multi-volume *History of Woman Suffrag*e; see "The Silent Feminist Revolution: Women and the Law in New York State from Blackstone to the Beginnings of the American Women's Rights Movement" (PhD diss., State University of New York at Buffalo, 1975), 3.
7. A speech he gave on the subject in January 1848 essentially cost him his congressional seat. The speech is reproduced online at http://medicolegal.tripod.com/lincolnvmexwar.htm.
8. See Constance Buel Burnett, *Five for Freedom* (New York: Greenwood Press, 1968), foreword. Basically, women, African Americans, and Native Americans were left out of this natural rights argument.
9. Norma Busch, *In the Eyes of the Law: Women, Marriage, and Property in Nineteenth-Century New York* (Ithaca, NY: Cornell University Press, 1982), 25. In 1789, some thirteen years after he was the major drafter of the American Declaration, Jefferson was involved in a repeat performance when, as American ambassador to France, he advised the French government about its proposed Declaration of the Rights of Man.
10. Sally G. McMillen, *Seneca Falls and the Origins of the Women's Rights Movement* (New York: Oxford University Press, 2008), 14. Even Adams's descendants were rebuked for their attitudes toward women; see Henry Adams, *The Education of Henry Adams* (New York: Random House, 1999), 442.
11. Mary Wollstonecraft, *A Vindication of the Rights of Woman*, 2nd. ed., ed. Carol H. Poston (New York: W.W. Norton, 1988). This was actually the second "vindication" Wollstonecraft wrote. The first, *A Vindication of the Rights of Man* (1790), was written in response to Edmund Burke's *Reflections on the Revolution in France* (1789), which attacked her circle of friends and her patron. It was forgotten in the controversy caused by one of these friends, Thomas Paine, with his *Rights of Man* (1791). *A Vindication of the Rights of Woman* was widely read in America around the middle of the nineteenth century; Lucretia Mott called it "my pet book" (McMillen, *Seneca Falls*, 32); see Carol Hymowitz and Michaele Weissman, *A History of Women in America* (New York: Bantam, 1978), 77.
12. Melder, *Beginnings of Sisterhood*, 1–2.
13. Plato wrote of having a dream of a society where all intelligent beings had equal rights, as noted in Eugene A. Hecker, *A Short History of Women's Rights* (Westport, CT: Greenwood Press, 1914), 236.

14. Busch, *In the Eyes of the Law*, 18; Hecker (*A Short History of Women's Rights*, 121), notes that the common law evolved toward more male dominance in the seventeenth and eighteenth centuries.
15. In special circumstances, such as being of age and unmarried, or widowed, a woman might be granted the status of *feme sole*, which allowed her to function in society; see ibid., 26–7.
16. Rabkin, "Silent Feminist Revolution," 31.
17. The idea that a sanctified marriage resulted in a man and woman becoming "one flesh" was translated into medieval law as a merger of the woman's rights and obligations into those of the man, since somebody in this union had to be responsible for its behavior.
18. Some colonies provided for joint deeds of land ownership and recognized women as business owners/operators in some areas of endeavor, such as taverns, inns, and shops. In 1787, Massachusetts allowed abandoned wives legally to become "sole traders" without requiring a special petition from the legislature, in part because of the hazards to men of the rising seaborne trade. Many States also shortened the time until a man could be presumed dead; see Busch, *In the Eyes of the Law*, 24–5.
19. As happened to Benjamin Franklin, leading him to escape from his native Boston to Philadelphia.
20. Busch, *In the Eyes of the Law*, 170.
21. Blackstone might even have distorted the common law in this regard out of personal feelings; such was the claim of Mary Beard in her *Woman as a Force in History: A Study in Transitions and Realities* (New York: Macmillan, 1946), according to Rabkin, "Silent Feminist Revolution."
22. Busch, *In the Eyes of the Law*, 40–9. Tappan Reeve founded the first law school in Litchfield, Connecticut, in 1784, and used a somewhat modified version of Blackstone in his teachings on marriage. In an 1816 publication, he upheld Blackstone's interpretation of marriage, though he questioned certain parts (57–8).
23. New York abolished property qualifications for suffrage in 1826 (ibid., 121).
24. Sara M. Evans, *Born for Liberty; A History of Women in America* (New York: Free Press, 1997), 72.
25. Frost and Cullen-DuPont, *Women's Suffrage in America*, 83.
26. Johnson, *History of the American People*, 671.
27. McMillen, *Seneca Falls*, 52.
28. Johnson, *History of the American People*, 402.
29. Melder, *Beginnings of Sisterhood*, 148.
30. Cullen, *Art of Democracy*, 85.
31. Temin, "Industrialization of New England," 115.
32. Melder, *Beginnings of Sisterhood*, 3.
33. W. Elliott Brownlee and Mary M. Brownlee, *Women in the American Economy* (New Haven, CT: Yale University Press, 1976), 3. A perceptive article that shows how *coverture* and the specie shortage in the early nineteenth century worked to underrepresent both the numbers of women involved in the labor force and to misrepresent the value of their work is Margaret Coleman, "Homemaker as Worker in the United States," *Challenge* 41 (6, 1998): 75–87.
34. McPherson, *Battle Cry of Freedom*, 33, 36. Some three-fourths of Massachusetts teachers were women by that time as well.

35. Even though some men felt that women should be restricted to domestic life in any case, the needs of a growing economy, especially in the cities, led many others to sponsor charities to help working women find jobs and provide them some training.
36. Busch, *In the Eyes of the Law*, 141. As late as the 1850s, very few postsecondary institutions admitted women; Oberlin and Antioch colleges in Ohio were perhaps the best known.
37. Evans, *Born for Liberty*, 4.
38. Wish, *Society and Thought in America*, 123; Wershler-Henry, *Iron Whim*, 85–7. In the late 1800s, the typewriter was seen as a means of female liberation.
39. Frost and Cullen-DuPont, *Women's Suffrage in America*, 60.
40. A prominent feminist, Abby Kelley, noted that the "petition is the only mode of access which the women of this country have to Congress" (quoted in Melder, *Beginnings of Sisterhood*, 98).
41. Nancy A. Hewitt, *Women's Activism and Social Change: Rochester, New York, 1822–1872* (Ithaca, NY: Cornell University Press, 1984), 41.
42. These persisted over time; I recall my mother going off to her "sewing club" in the 1950s. Sewing was always connected to women's reading and discussion groups; see Debra Gold Hansen, *Strained Sisterhood: Gender and Class in the Boston Female Anti-Slavery Society* (Amherst: University of Massachusetts Press, 1993), 51. In Warren, Massachusetts, the local literary circle suggested in 1840 that "ladies ought to mingle in politics, go to Congress, etc.," which was not what the clergy or town leaders wanted to hear. These societies also sometimes invited female lecturers. See Nancy Isenberg, *Sex and Citizenship in Antebellum America* (Chapel Hill: University of North Carolina Press, 1998), 60.
43. Melder, *Beginnings of Sisterhood*, 70. It made $300 for the cause; see Hansen, *Strained Sisterhood*, 14.
44. Melder, *Beginnings of Sisterhood*, 119.
45. One scriptural piece used to justify equal rights is from Paul's Letter to the Galatians (Gal. 3:28): "There was neither bond nor free, neither male nor female, for all were one in Christ Jesus"; see Isenberg, *Sex and Citizenship in Antebellum America*, 10.
46. The converts in the First Great Awakening were primarily men, but the Second appealed mainly to women (Evans, *Born for Liberty*, 65). Hewitt (*Women's Activism and Social Change*, 17–22) notes the heavy Yankee involvement in the women's voluntary groups of the time.
47. Evans, *Born for Liberty*, 67; see also Isenberg, *Sex and Citizenship in Antebellum America*, 59.
48. Johnson, *History of the American People*, 672.
49. As early as 1766, "alienation of affection" began to appear as a reason for petitioning for a divorce (Evans, *Born for Liberty*, 42).
50. Quoted in Ralph F. Young, ed., *Dissent in America: Voices That Shaped a Nation* (New York: Pearson Longman, 2006), 205.
51. See the whole of Hansen, *Strained Sisterhood*, but esp. 7, 118–19.
52. McMillen, *Seneca Falls*, 138.
53. James Fenimore Cooper saw feminine subordination as a critical part of building a conservative, hierarchical society in America; he was destined to see his world evolve in a different way.

54. Rabkin, "Silent Feminist Revolution," 16, 32, 34, 40, 48.
55. Ibid., 158. The existing equity rules were complex and subject to the perceptions of individual judges. As well, they allowed land, but not financial instruments, such as bonds and cash, to be protected, so many of the wealthy who were not associated with the land found the equity rules deficient in any case.
56. Other parts of the *coverture* relationship did not change, but what did change was due to the rise of a commercial system and the needs of the middle-class people involved in it (Busch, *In the Eyes of the Law*, 38, 137). Rabkin ("Silent Feminist Revolution," 147) notes that the legal code that began to change the system as early as 1827 defeudalized business relationships but left the marriage hierarchy untouched for the next twenty years.
57. An act relating to this problem was passed in 1840 by the New York legislature, which had the effect of stimulating this new industry (Busch, *In the Eyes of the Law*, 137).
58. A savings bank law was passed in 1850, and an 1851 law allowed women who owned shares in a company to vote them on her own account (ibid., 160).
59. Rabkin ("Silent Feminist Revolution") presents a detailed legal history of these reforms. A more popular version of the forces leading up to the act can be found in Burrows and Wallace, *Gotham*, 817–20. Mississippi passed the first such statute in 1839, largely at the behest of plantation owners who worried about wastrel sons-in-law. Michigan exempted a wife's property from her husband's debts in 1844, and Massachusetts limted a wife's separate estate to the provisions of an antenuptial (or "prenuptial," in modern-day parlance) agreement (Busch, *In the Eyes of the Law*, 27).
60. One of its proposers was a yankee State assemblyman, Ansel Bascom, who represented the Seneca Falls area. He and his daughter attended the Seneca Falls Convention (Busch, *In the Eyes of the Law*, 168).
61. Rabkin, "Silent Feminist Revolution," 172, 202, 230; see also Busch, *In the Eyes of the Law*, 156. In later years, a number of amendments broadened its intent.
62. Busch, *In the Eyes of the Law*, 161.
63. Ibid., 200–3, 206. Legislatures also curtailed the reach of some acts, as the New York Legislature did in 1862 relative to the 1860 act. Many jurists felt it was necessary for society to preserve marital unity at all costs, even if this meant turning a blind eye to abuses and injustices; see Isenberg, *Sex and Citizenship in Antebellum America*, 162.
64. Rabkin, "Silent Feminist Revolution," 249. Property rights "resurrected" women after being "legally dead" in Blackstone"s interpretation.
65. This, more than other reforms, would imply that the wife had a separate identity from that of the husband.
66. Rabkin, "Silent Feminist Revolution," 231–2.
67. Busch, *In the Eyes of the Law*, 28, 165, 187, 194–5. By the end of the Civil War, twenty-nine States had passed some form of married women's property act.
68. Giving immigrant males the right to vote while denying it to native-born women was galling, but then to give the vote to ex-slaves, who were not seen as on a par even with immigrants, enraged feminists. Although most feminists were abolitionists, they, like the broader Northern society, did not necessarily support equal rights for blacks, as witnessed by the discriminatory laws against free African Americans even in Northern States.
69. Busch (*In the Eyes of the Law*, 171) notes that what was new after 1848 was not the analysis, but the organized political milieu of the women's rights campaign.

70. In 1921, the so-called Portrait Monument honoring these three women was unveiled in the Capitol Rotunda. Later, the monument was relegated to the Capitol Crypt and forgotten until relocated in 1997 to a visible and honorable place.
71. Quakers settled on Nantucket in the late 1600s. It was considered second only to Philadelphia as a Quaker center; see Lloyd C.M. Hare, *The Greatest American Woman: Lucretia Mott* (New York: American Historical Society, 1937), 25. Burnett (*Five for Freedom*, 13–48) provides a short biography, from which some of the details in this section are taken. See also Margaret F. Bacon, *Valiant Friend: A Life of Lucretia Mott* (Philadelphia: Quaker Books, 1999); and Anna Davis Hallowell, *James and Lucretia Mott: Life and Letters* (Boston: Houghton Mifflin, 1884).
72. "In the same sense in which the greatest man ever produced in this country was Benjamin Franklin [her distant cousin], the greatest woman ever produced in the country is Lucretia Mott"; quote attributed to nineteenth-century newspaper editor Theodore Tilton in Hare, *Greatest American Woman*, intro.
73. Her mother's uncle, Captain Timothy Folger was the first to chart the course of the Gulf Stream, at the request of his cousin, Benjamin Franklin, and her mother's brother, Captain Mayhew Folger, found the *Bounty* mutineers on Pitcairn Island (ibid., 33). Evans (Born for Liberty, 28) notes that these early economic activities by American women have remained largely undocumented and "invisible" to historians.
74. The Nine Partners referred to a group of speculators who had gained a British patent to land in Dutchess County, now almost a New York City suburb up the Hudson River. Mott noted in later years that her tuition was the same as that of the boys, but she was given less schooling, perhaps the first awakening of the unequal status of women in that time (Burnett, *Five for Freedom*, 23). The school had been built just over the border from Connecticut by Quakers from Nantucket and Cape Cod (Hare, *Greatest American Woman*, 35).
75. She kept a copy of Mary Wollstonecraft's *Vindication* "front and center" in her home for forty years and would lend it to anyone she could convince to read it (Cromwell, *Lucretia Mott*, 28–9).
76. Her husband conducted most of the family correspondence, except for her letters to her sister (Hare, *Greatest American Woman*, 96).
77. Ibid., 47.
78. In the late 1820s, the Motts joined the Free Produce Movement, which boycotted products produced by slave labor, including cotton and sugar. James Mott also dropped slave-produced products from his wholesale business, even though this hurt it. See Cromwell, *Lucretia Mott*, 45-6, 47; and Hare, *Greatest American Woman*, 77.
79. Women's use of the petition appears to date to the mid-1830s; by the 1850s, they were using it in a sophisticated way (Busch, *In the Eyes of the Law*, 189–92).
80. Anti-feminist abolitionist James Birney called her "the Dangerous Mrs. Mott" (Hare, *Greatest American Woman*, 125).
81. Melder, *Beginnings of Sisterhood*, 113. On the three-week voyage to Europe, Lucretia spent much time down in steerage helping seasick mothers attend to their ill children (Cromwell, *Lucretia Mott*, 77).
82. Cromwell, *Lucretia Mott*, 74. There is the apocryphal story of another attendee, Wendell Phillips, who, as he left his boardinghouse in London, was told by his wife, "Wendell, don't shilly-shally." At the convention he delivered what is said to have been the first

speech by a man in defense of women's rights; see Cleveland Amory, *The Proper Bostonians* (Orleans, MA: Parnassus Imprints, 1984), 104–5.

83. Hare, *Greatest American Woman*, 34.
84. Ibid., 163–4; and Melder, *Beginnings of Sisterhood*, 125.
85. Cromwell, *Lucretia Mott*, 116.
86. Hare, *Greatest American Woman*, 185. One of Mott's Philadelphia friends was Emily Winslow Taylor, the mother of Frederick Winslow Taylor, the "father" of scientific management.
87. Hewitt (*Women's Activism and Social Change*, 36), that fifteen to twenty Hicksite families had migrated into the Rochester area in the early 1840s, providing a core radical group
88. A number of such conventions held in places west of the Alleghenies at the time, but since Stanton's Declaration of Sentiments became the guiding light of the movement, pride of place as the first national convention went to Seneca Falls (McMillen, *Seneca Falls*, 71–2).
89. Hewitt, Women's *Activism and Social Change*, 131. She quotes the *Rochester Daily Democrat* as saying of this meeting: "[The] congregation of females . . . seem to be really in earnest in their aim at revolution . . . verily, this is a progressive era!" (134).
90. Burnett (*Five for Freedom*, 49—128) provides a short biography from which some of the details in this section are taken; see also Jean H. Baker, *Sisters: The Lives of America's Suffragists* (New York: Hill and Wang, 2005), 94–129.
91. Melder (*Beginnings of Sisterhood*, 15–17) has a short description of the school. It was an early example of government aid for women's education, as Governor DeWitt Clinton used public funds to attract Willard to Troy to set up her school (Hecker, *Short History of Women's Rights*, 169). McMillen (*Seneca Falls*, 45) says the legislature refused the funds, so the town of Troy made the offer. Between 1821 and 1872, the Troy Women's Seminary educated over twelve thousand women (Frost and Cullen-DuPont, *Women's Suffrage in America*, 4).
92. Hymowitz and Weissman, *History of Women in America*, 90. Prior to the founding of Cornell University in 1868, no New York college admitted women (Klein, *Empire State*, 280).
93. In 1852, Smith noted that "political rights are not conventional, but natural — inhering in all persons, the black as well as the white, the female as well as the male" (Busch, *In the Eyes of the Law*, 171).
94. Rabkin, "Silent Feminist Revolution," 9. The first woman lawyer in America practiced in Baltimore in 1647, while the second, 222 years later, was Arabella Babb Mansfield, in Iowa in 1869, who gained a license but never practiced. By 1879, women could plead in front of the US Supreme Court (Hecker, *Short History of Women's Rights*, 179).
95. Stanton visited the Brook Farm commune just outside Boston to see a supposed example of gender equality (McMillen, *Seneca Falls*, 41).
96. Frost and Cullen-DuPont, *Women's Suffrage in America*, 86.
97. Stanton claimed in later years that her father said, "when you are grown up, you must go down to Albany and talk to the legislators . . . .[I]f you can persuade them to pass new laws, the old ones will be a dead letter"; quoted in Rabkin, "Silent Feminist Revolution," 224.

98. Busch, *In the Eyes of the Law*, 137, 167. Women had been petitioning for such an act since 1839; see Rabkin, "Silent Feminist Revolution," 185, who also suggests (226) that Stanton had been involved in the campaign for the act since the early 1840s.
99. William Leach, *True Love and Perfect Union: The Feminist Reform of Sex and Society* (Middletown, CT: Wesleyan University Press, 1980), xiv.
100. Busch, *In the Eyes of the Law*, 141.
101. Burnett, *Five for Freedom*, 65.
102. Leach, *True Love and Perfect Union*, 143.
103. She had a precedent in that a petition by forty-four women from Wyoming and Genesee counties, adjacent to Seneca Falls, to the legislature four months earlier had made a similar reference to the Declaration of Independence (Busch, *In the Eyes of the Law*, 156).
104. Hecker (*Short History of Women's Rights*, 289) notes that Kentucky had given school suffrage to widows with school-age children in 1838; Upper Canada (now Ontario) did likewise in 1850.
105. Baker, *Sisters*, 6.
106. See Smithsoniam Institution, National Portrait Gallery, "The Seneca Falls Convention, July 19–20, 1848" (Washington, DC); available online at http://www.npg.si.edu/col/seneca/senfalls1.htm.
107. McMillen, *Seneca Falls*, 106, 113. Detractors would call the annual conventions "petticoat parliaments"; see Isenberg, *Sex and Citizenship in Antebellum America*, 32, for details of this convention.
108. Hymowitz and Weissman, *History of Women in America*, 117.
109. Leach, *True Love and Perfect Union*, 52.
110. See Burnett, *Five for Freedom*, 177–256, for a short biography, from which some of the details in this section are taken.
111. The dual standard was justified by claiming that women were working only until they got married, while male teachers had other opportunities (Melder, *Beginnings of Sisterhood*, 26).
112. Busch (*In the Eyes of the Law*, 174) notes that, in the 1850s, the temperance struggle seemed to be failing and many of its activists had switched to promoting women's rights.
113. Leach, *True Love and Perfect Union*, xvii, xix.
114. Rabkin, "Silent Feminist Revolution," 317. The Equal Rights Amendment was proposed in 1923, but not passed by Congress until 1972; by 1982 only thirty-five of the needed thirty-eight States had passed it, with five of these having rescinded their agreement, and the effort disappeared.
115. See Dee Brown, *The American West* (New York: Charles Scribner's Sons, 1994), 392–3; Dayton Duncan, *Miles from Nowhere: In Search of the American Frontier*, 2nd. ed. (New York: Penguin, 1994), 193–4; and Ted Morgan, *A Shovel of Stars: The Making of the American West, 1800 to the Present* (New York: Simon & Schuster, 1995), 355.

Chapter 16

1. Andrews, *People Called Shakers*, xiii.
2. Klees, *Crucible of Ferment*, 127.
3. See, for example, Marc Reisner, *Cadillac Desert: The American West and Its Disappearing Water* (1846; rev. ed. New York: Penguin, 1993), p.2.
4. Like other communal societies to come, the Plymouth colonists believed in the perfectability of mankind; see William M. Kephart, *Extraordinary Groups: The Sociology of Unconventional Life-Styles* (New York: St. Martin's Press, 1976), 285.
5. Ziff, *Puritanism in America*, 37–9. The failure of most of these communal experiments was first and foremost an economic one: if the colony could not turn a profit — that is, produce more than it consumed — it failed; see Kephart, *Extraordinary Groups*, 292, 294.
6. Ziff, *Puritanism in America*, 37–40. Equality also arose from the notion that each person was a priest unto himself and equal to all others. A leader was accepted because of his superior learning and wisdom, not because he was special in the eyes of God (279).
7. Robert V. Hine, *Community on the American Frontier: Separate but Not Alone* (Norman: University of Oklahoma Press, 1980), 184–5. Success first depended on the colonies' finding ways to earn money to sustain themselves, at which they sometimes became so successful that it threatened their future (Klees, *Crucible of Ferment*, 132).
8. Andrews, *People Called Shakers*, 5.
9. Bloom, *American Religion*, 67.
10. Ibid., 13.
11. A second party came in 1775; see John L. Scherer, ed., *A Shaker Legacy: The Shaker Collection at the New York State Museum*, rev. ed. (Albany: New York State Education Department, 2000), 1.
12. Andrews, *People Called Shakers*, 15; see also Klees, *Crucible of Ferment*, 143.
13. Andrews, *People Called Shakers*, 17.
14. Kephart, *Extraordinary Groups*, 161. Her name was Margaret Vedder (Scherer, *Shaker Legacy*, 1).
15. Nevertheless, females tended to outnumber males by two to one among Shaker members (Kephart, *Extraordinary Groups*, 165).
16. Andrews, *People Called Shakers*, 18–20; Klees, *Crucible of Ferment*, 140.
17. Andrews, *People Called Shakers*, 32–33.
18. Ibid., 35–8.
19. Most of the traditional Congregationalists in New England regarded Shakers as extreme heretics; see ibid., 44, 52.
20. New Lebanon is just over the Massachusetts line at the foot of the Berkshires on US 20. The large Shaker village there was abandoned in 1947. Parts were taken over by a school and the rest by the Shaker Museum and Library,
21. Klees, *Crucible of Ferment*, 152.
22. Meacham died in 1796, but Mother Lucy carried on into the 1820s.
23. Andrews, *People Called Shakers*, 58.

24. Ibid., 60, quoting from a Shaker document. James Fenimore Cooper stated he had not seen "in any country, villages as neat, and so perfectly beautiful, as to order and arrangement, without, however, being picturesque or ornamented, as those of the Shakers" (127).
25. Ibid., 120–1.
26. Expansion into Ohio came as a result of the rift between New Light Presbyterians and the more orthodox Presbyterians (Hurt, *Ohio Frontier*, 291–3, 298). The Shaker colony of North Union, Ohio, later became Shaker Heights, a suburb of Cleveland, and is only a couple of miles south of US 20. In Kentucky, the revivalist movement, with its emotional emphasis, was close to the "dance" of the Shakers (Andrews, *People Called Shakers*, 138–9).
27. Apparently most people rotated through jobs on a monthly basis, to improve their versatility (Burns and Burns, *Shakers*, 80–5).
28. Kephart, *Extraordinary Groups*, 168, 175.
29. Ann Lee emphasized labor and thrift. "If you are not faithful in the unrighteous mammon, how can you expect the true riches?"; quoted in Andrews, *People Called Shakers*, 24.
30. One result was that neighboring towns began to give the Shakers their share of "school money" for educating children (ibid., 66).
31. The text has been digitized and is available online at http://books.google.com/books?id=zPI2AAAAMAAJ&pg=PA1&source=gbs_toc_r&cad=4#v=onepage&q&f=
false.
32. An 1847 reprint of this publication has been digitized and is available online at http://books.google.com/books?id=C1goAAAAYAAJ&printsec=frontcover&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false.
33. Andrews, *People Called Shakers*, 99–100.
34. The Shaker communities not only practiced celibacy, but planned the near-total segregation of the sexes in daily life (Kephart, *Extraordinary Groups*, 176).
35. In 1784, New York provided for the "free incorporation" of religious societies, which allowed them to apply for and receive money if they provided a school. New England provided similar rights for "dissenting" sects, which were colored by the continuing establishment of the Congregational church. See Curtis D. Johnson, *Islands of Holiness: Rural Religion in Upstate New York, 1790–1860* (Ithaca, NY: Cornell University Press, 1989), 16–17.
36. Andrews, *People Called Shakers*, 189.
37. Kephart, *Extraordinary Groups*, 172.
38. She said, "You must be kind to strangers, for that is the way that you can reward me" (Andrews, *People Called Shakers*, 24).
39. Pierson, *Tocqueville in America*, 178–9.
40. Apparently, there were few resignations, in part due to the careful process of selection of adherents (Kephart, *Extraordinary Groups*, 175).
41. Only one in ten children remained in the colonies after they grew up, which gives some indication of the problem (ibid., 165–6, 183).
42. Burns and Burns, *Shakers*, 119.
43. Andrews, *People Called Shakers*, 224. Another source puts their peak at nineteen colonies containing seventeen thousand adherents (Kephart, *Extraordinary Groups*, 164).

See also "The Last Seven Shakers in the World," *Economist*, February 13, 1999, 11. The last male Shaker died in 1961 and the society decided to close its admissions shortly thereafter (Burns and Burns, *Shakers*, 120).

44. Klees, *Crucible of Ferment*, 77. Virtually all of the early Mormon leadership and membership were of Yankee origins; see Leonard J. Arrington, *Great Basin Kingdom: An Economic History of the Latter-day Saints, 1830–1900* (1958; repr. Cambridge, MA: Harvard University Press, 1993), 3.
45. See, for instance, Klees, *People of the Finger Lakes Region*, 191; and idem, *Crucible of Ferment*, 75–80. William Least Heat-Moon describes his reaction to the site in *Blue Highways: A Journey into America* (Boston: Little, Brown, 1999), 317.
46. Kephart, *Extraordinary Groups*, 196. There has been much controversy over its provenance, but, regardless of its inspiration, it was quite a feat for a basically unschooled young man to have dictated to his wife and some associates more than five hundred pages of a text done in a scriptural style. The book was published in an edition of five thousand copies in 1830; see Morgan, *Shovel of Stars*, 379–80.
47. Ralph Waldo Emerson, visiting Utah in 1871, saw them as an "afterclap of Puritanism" (Bloom, *American Religion*, 53).
48. A theologically contemptuous Bernard DeVoto (*Year of Decision*, 82–3) lists some of the parallels, which is a useful list if taken out of context.
49. Kephart, *Extraordinary Groups*, 216.
50. Ziff, *Puritanism in America*, 279.
51. The experiment with communistic organization was suspended early on, but a lower degree of communal activity and group settlement did make a success out of the settlements in Missouri, Illinois, and Utah.
52. There are suggestions that some Shaker influence was behind Smith's ideas to remove his people from physical integration with others (Andrews, *People Called Shakers*, 222–3).
53. A number of reasons have been advanced for this practice, including promoting a higher birth rate, an excess of females over males in the church, and so forth. None really stands up to examination, and the conclusion is that it arose from the belief that God wanted it. The rules governing polygamy were well defined; it was not simply a frivolous, personal decision by the husband (Kephart, *Extraordinary Groups*, 206–15). The proportion of polygamous families was always small, and each wife had an individual home with her children (Wish, *Society and Thought in America*, 82).
54. It gained a thousand members in its first year (Kephart, *Extraordinary Groups*, 201).
55. An interesting tale of one Mormon woman's life from the 1830s until teh creation of Deseret is found in Morgan, *Shovel of Stars*, 379–88.
56. Billington, *Westward Expansion*, 455–7.
57. Smith's announcement of a revelation that encouraged polygamy incensed the Mormons' neighbors, not just because it offended local religious tradition and custom, but also because of the more practical gender imbalance on the frontier (DeVoto, *Year of Decision*, 82).
58. Young started his working life in his teens as a painter and carpenter (Kephart, *Extraordinary Groups*, 202). When he was fifteen, he worked on William Seward's house in Auburn, New York, when he was 15 (C-Span and Bentzel, *C-SPAN's Traveling Tocqueville's America*, 40).

59. Ray Allen Billington, *The Far Western Frontier, 1830–1860* (New York: Harper, 1956), 195–7. Young had known in advance where the new colony would be located.
60. DeVoto, *Year of Decision*, 449.
61. By the fall of that year, there were 1,800 people in the valley (Billington, *Far Western Frontier*, 200).
62. See DeVoto, *Year of Decision*, 468. A compromise on creating the Utah Territory left the Mormon leadership largely in place (Billington, *Far Western Frontier*, 205). The original borders proposed by the Mormons took in nearly all of Utah, Nevada, and Arizona, plus portions of Oregon, Idaho, Wyoming, and Colorado (Duncan, Miles from Nowhere, 110). Congress continually cut the area down before 1896, when Utah was granted statehood.
63. Billington, *Far Western Frontier*, 202; see also Klees, *Crucible of Ferment*, 75, 88–90.
64. Town lots and farmland in the outskirts were allocated on the same basis as in Puritan New England in the 1600s and early 1700s (Hine, *Community on the American Frontier*, 211).
65. Billington, *Far Western Frontier*, 201–2.
66. Billington, *Westward Expansion*, 459–61.
67. Bloom, *American Religion*, 83.
68. Arrington, *Great Basin Kingdom*, 174.
69. Charles P. Roland, *Albert Sidney Johnston: Soldier of Three Republics* (Lexington: University Press of Kentucky, 2001), 204.
70. Arrington, *Great Basin Kingdom*, 83–4, 112–3, 133, 196.
71. Despite the arrival of so many non-Mormons, there was to be no relenting on the communal aspects of the society, an issue over which there was an internal Mormon struggle in 1869 (Arrington, *Great Basin Kingdom*, 233–4).
72. Klees, *Crucible of Ferment*, 88.
73. The 1862 anti-bigamy act was designed as well to prevent the church-business relationship from growing. As Arrington notes (*Great Basin Kingdom*, 257–8), "[t]he particular clause of the 1862 act which created difficulty was one which incorporated the Church of Jesus Christ of Latter-day Saints and limited the amount of real estate which it could hold to $50,000. Any property acquired by the church in excess of that value was to be 'forfeited and escheat to the United States'. The object of this section, according to Senator Bayard of Delaware who sponsored it, was to prevent the accumulation, in Utah, of wealth and property in the hands of ecclesiastical corporations or "theocratic institutions inconsistent with our form of government."
74. Klees, *Crucible of Ferment*, 90.
75. Arrington, *Great Basin Kingdom*, 313, 321–2, 338.
76. Because the party in power in Washington was Republican, most Mormons opted to support that party; voting patterns suggest the Mormon-Gentile division remains today.
77. Seventy percent of Utah's population remains Mormon today. In 2002, all of its representatives in Congress, 90 percent of the members of the State legislature, all of its Supreme Court justices, and 80 percent of its state and federal judges were also Mormon; see "The Church of the West," *Economist*, February 9, 2002, 25. I doubt there has been much change to these proportions in the past decade.
78. Kephart, *Extraordinary Groups*, 235–6.

79. "Editorial notice in the Dial in 1840 by Elizabeth Palmer Peabody," in *The Brook Farm Book: A Collection of First-Hand Accounts of the Community*, ed. Joel Myerson (New York: Garland, 1987), 302–3.
80. Hine (*Community on the American Frontier*, 201–2) notes that, of ninety-two such experiments before the Civil War, only two were planted across the Mississippi; most were attempted on the frontier of the day, making Brook Farm something of an oddity.
81. Eventually the number grew to thirty-two. Thoreau, when approached, refused, claiming to be a "community of one" (Maynard, *Walden Pond*, 63).
82. Amory, *Proper Bostonians*, 103.
83. If the aim was to show a way of life superior to the industrial society of the time, then management had to be better than that "outside." It wasn't. See DeVoto, *Year of Decision*, 104.
84. Hawthorne was an original shareholder and participant in Brook Farm, and lasted over a year before leaving. At one point, he was effectively its chief financial officer. He sued to get his money back (ibid., 33).
85. Ibid.
86. A number of Fourier's "Phalansteries" were created in North America after his death in 1837, but almost none lasted long.
87. One, Isaac Hecker, became a Roman Catholic and in 1858 was the founder of the first American-based priestly order, the Paulists.
88. DeVoto, *Year of Decision*, 103.
89. Barbara L. Packer, *The Transcendentalists* (Athens GA: The University of Georgia Press, 2007, p.161.
90. The paper's editor, Horace Greeley, was a long-time advocate of Fourier's "associationism" ideas.
91. See Robert Twombly, ed., *Frederick Law Olmstead: Essential Texts* (New York: W.W. Norton, 2010), chap. 2.
92. Ibid., 33.
93. Noyes's mother was a relative of President Rutherford B. Hayes; his father was a successful businessman and Vermont congressman (Kephart, *Extraordinary Groups*, 52, 252).
94. The term was applied to those ideas that claimed that faith essentially trumped human or church law. Perfectionism did not start with Noyes, but his approach to it was novel; see ibid., 53–4.
95. Lawrence Foster, *Religion and Sexuality* (New York: Oxford University Press, 1981), 77–9. He had received his license in 1833 (Kephart, *Extraordinary Groups*, 53).
96. Holbrook, *Old Post Road*, 131; see also Foster, *Religion and Sexuality*, 79–81.
97. Kephart, *Extraordinary Groups*, 54.
98. Ibid., 53–6.
99. He claimed he had done it to spare his followers from mob violence (ibid., 55).
100. Eventually, they acquired about six hundred acres (ibid., 56). Klein (*Empire State*, 339) believes it to be "one of the most successful communitarian experiment in American history."
101. Kephart, *Extraordinary Groups*, 67, 73.
102. Ibid., 74–5.
103. Klees, *Crucible of Ferment*, 132–3.

104. Traveler Charles Nordhoff noted that the colony also employed people from outside to help with its domestic tasks; see Charles Nordhoff, *The Communistic Societies of the United States* (1875; New York: Schocken, 1965), 286.
105. Noyes, as God's representative on Earth, played a dominant but not sole role in the larger managerial discussions. (Kephart, *Extraordinary Groups*, 61–3).
106. Nordhoff, *Communistic Societies*, 285. Nordhoff gives a good account of the daily life of the community.
107. Noyes became familiar with experiments in plant and animal breeding and Darwinian selection theory (Kephart, *Extraordinary Groups*, 89).
108. In 1873, they received over two hundred applications to join (ibid., 66).
109. Ibid., 59–60.
110. Ibid., 64.
111. Ibid., 58.
112. Ibid., 98.
113. The value of the colony and its factory was estimated to be $600,000 in 1881 (ibid., 77); see also Klees, *Crucible of Ferment*, 135.
114. Klees, *Crucible of Ferment*, 179–82. Since 2000, the company has struggled to survive globalization and other shocks; see Chana R. Schoenberger, "Tarnished," *Forbes*, March 15, 2004, 80–1.
115. Kephart, *Extraordinary Groups*, 292–5.
116. See Foster, *Religion and Sexuality*, 15–16.
117. Quoted in Andrews, *People Called Shakers*, xiii.

Chapter 17

1. Tom Standage, *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's On-line Pioneers* (London: Phoenix, 1999), 96. Steam engines were used to create air pressure variations in pneumatic tubes that ran from the telegraph office underground to large users downtown.
2. Oslin, *Story of Telecommunications*, 230.
3. Katie Hafner and Matthew Lyon, *Where Wizards Stay Up Late: The Origins of the Internet* (New York: Simon & Schuster Paperbacks, 2006), 192.
4. Numerous websites are devoted to the history of Rochester history; for a basic timeline, see http://www.cityofrochester.gov/app.aspx?id=8589937391.
5. Details of Reynolds's life can be found in M.B. Anderson and D.K. Bartlett, "Address and Sermon on the Death of William Abelard Reynolds with other memorial papers" (Rochester, 1872); available online at http://books.google.ca/books?id=o3YPAAAAYAAJ&dq=Abelard+reynolds&printsec=frontcover&source=bl&ots=FcsGOyScBg&sig=XBSo3U8UYqBIEspttmvt_h5XdhI&hl=en&ei=SDTnSpnJKcbDlAenyb3_Bw&sa=X&oi=book_result&ct=result&resnum=6&ved=0CBoQ6AEwBQ#v=onepage&q=&f=false.

6. Rochester was a classic boom town, growing from 1,500 in 1820 to 5,300 in 1825 and to 162, 000 by the end of the century. In 1817, Rochester flour mills exported 26,000 barrels of wheat, mostly to Canada. In 1827, they sent 200,000 barrels of flour along the Erie Canal. By the late 1830s, twenty-four mills were shipping a half-million barrels east, and Rochester was the largest producer of wheat flour in the world at the time. See Koeppel, *Bond of Union*, 372.
7. For the Arcade's story, see Monroe County Library System, "The Reynolds Arcade" (Rochester, NY, n.d.); available online at http://www.rochester.lib.ny.us/rochimag/architecture/LostRochester/Reynolds/Reynolds.htm.
8. Elizabeth Brayer, *George Eastman: A Biography* (1996; Rochester, NY: University of Rochester Press, 2006), 19.
9. The precedent for this approach is Standage, *Victorian Internet*, introduction.
10. Ibid., 199–200.
11. A good biography of Morse is Kenneth Silverman, *Lightning Man: The Accursed Life of Samuel F.B. Morse* (New York: Alfred Knopf, 2003).
12. Robert L. Thompson, *Wiring a Continent: The History of the Telegraph Industry in the United States, 1832–1866* (New York: Arno Press, 1972), 5. His ancestors arrived in Newburyport in 1635.
13. Ibid., 6. Many years later, Silliman's son would be the Yale professor who verified the theories of some Connecticut businessmen that petroleum, or "rock oil" could be processed to make kerosene, a lighting substitute for increasingly hard-to-get "whale oil."
14. Ibid., 7.
15. As early as 1822, Morse recognized, in a letter to his wife, that the opening of the Erie Canal would bring wealth and a greater demand for portraits in New York City than anywhere else (Koeppel, *Bond of Union*, 309–10). In 1827, while living in New York, he befriended a Dartmouth College professor, James Freeman Dana, who, in 1825, had published a set of lectures entitled "Epitome of Chymical Philosophy." Dana was in New York lecturing on chemistry, including electricity, and he and Morse spent much time discussing the subject (Thompson, *Wiring a Continent*, 7).
16. At the time, a packet might take as long as a month to make the crossing, so there was time to discuss ideas and think about them; see K.G. Beauchamp and Institution of Electrical Engineers, *History of Telegraphy* (London: Institution of Electrical Engineers, 2001), 51.
17. A detailed account of Morse's involvement in the development of the telegraph can be found in the text of a Memorial to S.F.B. Morse published by the Boston City council in 1972; available online at http://www.archive.org/stream/amemorialsamuel00coungoog/amemorialsamuel00coungoog_djvu.txt; seee also Oliver, History of American Technology, 218–19.
18. Oslin, Story of Telecommunications, 16.
19. Annteresa Lubrano, *The Telegraph: How Technology Innovation Caused Social Change* (New York: Garland Publishing, 1997), 6–7, notes that the "invention of the telegraph was the product of an accumulated store of knowledge." Closer to Morse personally was a Concord, Massachusetts, Yankee, Harrison Gray Dyar, who strung a line along the Lowell road out of Concord in 1826 as an experiment. Two years later, he strung a line several miles long from a New York racetrack that could carry signals marked on litmus

paper. Finding himself in a controversy over his line, he left the country and made a career for himself as a chemist in France. Morse's brother-in-law, a lawyer, was Dyar's counsel at the time; see Oslin, *Story of Telecommunications*, 7–8; and Alfred Munroe, "Concord and the Telegraph" (paper presented to the Concord Antiquarian Society, Concord, MA, January 6, 1902), available online at http://www.archive.org/stream/preliminariesofc00tolm/preliminariesofc00tolm_djvu.txt.

20. Morse apparently knew little of others who had worked on parts of the telegraph system up to then, but Gale did and improved both his battery power source and his electromagnets. These allowed Morse to transmit messages for miles instead of feet (Thompson, *Wiring a Continent*, 9).
21. Ibid., 10–11.
22. Although claims after Vail's death were made that the code was his invention, both he and Morse had agreed that it was Morse's concept as early as his voyage home from Europe (Silverman, *Lightning Man*, 167, 434, 443). Brian Winston, in *Media Technology and Society: A History* (London: Routledge, 1998), 26, claims that Morse directed Vail to get the frequency distribution of letters from the printer and worked on the code revision himself. Beauchamp and Institution of Electrical Engineers (*History of Telegraphy*, 55) are more vague, noting that Morse originally began with his cipher system, but abandoned it after working with Vail. It would also seem that code was transmitted to a compass needle mechanism at first, as the buzzer or clicker announcing the dots and dashes was not invented until later (Crump, *Brief History of the Age of Steam*, 171). Beauchamp and Institution of Electrical Engineers (*History of Telegraphy*, 36) show a similar code developed in Germany by Carl August von Steinheil in 1836.
23. The government's interest was really in a proposal to build a semaphore system between Washington, DC, and New Orleans. Semaphore systems were in existence in the Boston and New York areas, and a national system had been proposed as a military aid in the years leading up to the War of 1812 but never implemented. Tensions with Mexico over Texas apparently were part of the appeal of this new proposal (Thompson, *Wiring a Continent*, 11–12, n18).
24. Hawke, *Nuts and Bolts of the Past*, 193; and Thompson, *Wiring a Continent*, 12–15. Ever curious, Morse visited Louis Daguerre while in Paris and, upon his return, wrote the first American account of the new technology of photography.
25. The vote was 90 to 82, with 55 of the yeas coming from congressmen from "Yankee Road" States. The grant is a rare instance of the early federal government's supporting a technology demonstration (Hawke, *Nuts and Bolts of the Past*, 193).
26. The story has it that Cornell walked two and a half days from Boston to Portland, Maine, and, on entering the office of a small local newspaper, The Maine Farmer, he was greeted by its editor, "Fog" Smith, who was on his hands and knees trying to make a chalk outline of a plow to lay wire for the telegraph. He asked Cornell to design the plow, and Cornell went on to wealth and fame in the telegraph business. By 1860, Cornell had retired to become a gentleman-farmer near Ithaca, New York. He was then the largest shareholder in Western Union. He donated three hundred acres of land and $500,000 to endow the non-sectarian college that bears his name. See Walter P. Marshall, *Ezra Cornell, His Contributions to Western Union and to Cornell University* (New York: Newcomen Society in North America, 1951), 8–9. Morse, in fact, knew about the above-

ground alternative, but feared that vandals would cut the lines (Silverman, *Lightning Man*, 222–3).

27. The phrase had been suggested to him by Annie Ellsworth, the daughter of his old friend, Commissioner of Patents H.L. Ellsworth (Oslin, *Story of Telecommunications*, 25, 32–3).
28. Ibid., 32–4.
29. Attempts to move information faster than animal power dated back thousands of years. Classical civilizations used fire signals and heliographs to warn of approaching ships and armies. Semaphore systems were in wide use by the military in Europe and America, with the French employing five hundred stations in the years before the telegraph; see Lubrano, *Telegraph*, 10; and Gordon, *Great Game*, 79. A British patent for an electric telegraph was issued in the year before Morse's in America (Lubrano, *Telegraph*, xiii, 6–9). A list of no fewer than forty-eight developers of telegraphic systems between 1753 and 1848 (including Morse) is found in Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 27.
30. Thompson, *Wiring a Continent*, 42–7. Some of the first users of the line were the operators of a lottery in Philadelphia, who saw the telegraph as an efficient way to get their numbers sent to clients in New York City. Gambling was apparently the first "real-time" business to go on "the Victorian Internet." Stockbrokers were also early adopters.
31. Butterfield's father came from New Hampshire to the Albany area in the 1790s and married a local girl. John Butterfield went on to form the Butterfield Stage Lines in the West, later famous in the movies and, with Henry Wells and William Fargo, created the American Express Company to deliver packages on the railroads. His son, Civil War general Daniel Butterfield, is credited with composing the famous military salute, "Taps."
32. Standage, *Victorian Internet*, 55.
33. The postmaster general who had disparaged the invention now made an unsuccessful appeal to Congress to support the company for a subsidy for a line south to help improve military communications (Thompson, *Wiring a Continent*, 51–3).
34. For the story of this news syndicate and its battles with "Fog" Smith, see Lubrano, *Telegraph*, 41; and Thompson, *Wiring a Continent*, 217–39. Besides the news syndicate, telegraph operators were encouraged to act as reporters along the lines, sending local news stories to regional papers (Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 60).
35. The postmaster general also simply might have been politically opposed, as Clay had been a supporter of the telegraph, but had lost the 1844 presidential election to James K. Polk. As well, since Morse had already moved by then to create and finance new lines, there was a feeling in Congress that the competition would damage any public lines' profitability (Thompson, *Wiring a Continent*, 32–4). In 1868, Congress debated the possibility of either nationalizing Western Union or creating a government corporation to compete with it. After a great deal of controversy, the idea was shelved (Silverman, *Lightning Man*, 424–6).
36. Standage, *Victorian Internet*, 58, 60. It could be that the number of separate companies had more to do with the State regulations that governed incorporation than the desire of a multitude of entrepreneurs to get into the business. Both the railroads and Standard Oil ran into interstate activity and control problems from this legislative bias when dealing with national systems.
37. Thompson, *Wiring a Continent*, 240.

38. Ibid., 242. For another quote from this report, see Mazlish, *Railroad and the Space Program*, 95.
39. Mazlish, *Railroad and the Space Program*, 208.
40. These systems, including Morse's, employed keyboards that resembled the one Christopher Sholes developed for his typewriter twenty-five years later (Oliver, *History of American Technology*, 440).
41. One local businessman was Samuel Colt, who was busy stringing wire of his own manufacture around Long Island and into New Jersey until an order from the Army for a thousand of his revolvers for use in the Mexican War drew him into large-scale arms manufacturing (Thompson, *Wiring a Continent*, 90–2).
42. Ibid., 243.
43. Like many others in the post–Mexican War economy, they faced hard times, and O'Reilly had found alternative finance in Pennsylvania. He was then caught in a dispute between the two groups with claims to shares in his companies (ibid., 184–5).
44. Ibid., 264–5. Sibley worked in a textile mill as a youth, later setting up the mill's machine shop. In Rochester, he became rich in banking and real estate (Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 66).
45. Oslin, *Story of Telecommunications*, 73.
46. Ibid., 75. Most of the following story comes from Thompson, *Wiring a Continent*, chaps. 16–18.
47. The House printing telegraph, which the Morse patentees fought from 1845 to 1848, was a formidable competitor (Thompson, *Wiring a Continent*, 54–5). This machine was faster than the human transcriber but also limited the range of the telegraph because of the electrical resistance caused by the machine.
48. Ibid., 270–5.
49. "Embraced" is perhaps too strong a word. The railroads gradually saw that the telegraph would allow them to use use their expensive capital stock more intensively (Martin, *Railroads Triumphant*, 272), while telegraph operators found they could efficiently monitor their lines by using railroad crews to watch over them (Mazlish, *Railroad and the Space Program*, 95). The British were the first to realize that the two technologies were complementary, even though the first lines were built in both countries along railroad rights of way (Crump, *Brief History of the Age of Steam*, 171–2). American lines responded differently to the idea: as late as the 1870s, lines such as those emanating from Boston preferred to operate "by the book" — that is, with rigidly fixed schedules — rather than rely on telegraphers to coordinate things (Oliver, *History of American Technology*, 219–20; Martin, *Railroads Triumphant*, 271–4).
50. Thompson, *Wiring a Continent*, 275–7.
51. Cornell had worked for the Magnetic Telegraph Company, but left to go on his own as a result of disagreements with Vail. He then built the line across New York State for Faxton and Butterfield.
52. Cornell had built the line along the Erie Railroad across southern New York, which had gone bankrupt, and named it the New York and Western Union; presumably, he had an attachment to the name (Thompson, *Wiring a Continent*, 196).
53. For all practical purposes, Western Union emerged from the Civil War as a monopoly, its main competitor, the American Telegraph Company, having been hurt because its lines paralleled the Atlantic coast and had been subject to disruption by the war (Lubrano,

Telegraph, 70; Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 67). Even so, in 1886, there were 217 telegraph companies in America, nearly all with but a few miles of line (65).

54. Thompson, *Wiring a Continent*, viii. There are many examples of local services and industries that were "legislated" monopolies extending back to the national trading companies that led to the creation of many of the original colonies.
55. Both Thomas Edison and Andrew Carnegie had been telegraphers (Standage, *Victorian Internet*, 62).
56. Sibley's desire to develop a world-spanning network led him, during the Civil War, to explore the possibility of a line through Russian America (Alaska) and Siberia to Europe and China. This resulted in Western Union's seeking to buy or lease a right-of-way from the Russian-American Company. One thing led to another, and Secretary of State William Seward purchased the whole of the territory from the Russians in 1867. There were mixed motives: Seward and Sibley were friends, and Seward had a desire to see the United States acquire the whole of the continent north of Mexico.
57. Chandler Jr., *Visible Hand*, 189.
58. Lubrano, *Telegraph*, 15–16, 85, 133–7.
59. Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 174–6.
60. Standage, *Victorian Internet*, 136–44; Lubrano, *Telegraph*, 72–3.
61. By 1860, New York was setting security prices for every major city in the United States, as the telegraph allowed for daily negotiations (Lubrano, *Telegraph*, 156). Forty years earlier, Andrew Dexter had carried fraudulent bonds from a then-remote Detroit bank to Boston to be used there as "capital" for his construction speculations. Such a way to commit that crime could not succeed in this new era — instead, new devices had to be invented for this purpose, as they still are; see Kamensky, *Exchange Artist*.
62. Lubrano, *Telegraph*, 156.
63. Standage, *Victorian Internet*, 125–6.
64. Oslin, *Story of Telecommunications*, 187–8. Western Union preserved Room 22 in the Arcade as it was, as a reminder of the company's origins.
65. Lubrano (*Telegraph*, xiv) notes that "it was the first step in the process of continuous improvement leading to the information superhighway." For a more detailed story of the evolution from the telegraph to the internet, with an emphasis on the role of AT&T and the telephone, see Alan Stone, *How America Got On-Line: Politics, Markets, and the Revolution in Telecommunications* (Armonk, NY: M.E. Sharpe, 1997).
66. Ironically, two patents were submitted by two different people on the same day (Lubrano, *Telegraph*, 7; Standage, *Victorian Internet*, 184–7). Alexander Graham Bell's had precedence, so he is the "inventor" of what others had developed as well, not unlike Morse's "invention" of the telegraph. Apparently, had Edison not been hard of hearing, he would have invented the telephone a month earlier than either of these (Oslin, *Story of Telecommunications*, chap. 14). A year later, Edison invented a "repeating telegraph," which became better known as the phonograph (Lubrano, *Telegraph*, 34n2). The second to submit a patent application for a telephone, Elisha Gray, had founded a telegraph equipment supplier in Cleveland in 1869 and moved it to Chicago, where it became Western Electric, eventually a large supplier to the telephone industry and a subsidiary of AT&T. Bell derived considerable assistance for his invention from contacts at MIT.

67. Western Union had bought out Elisha Gray's rights to the telephone. The 1879 agreement between Western Union and the Bell company was for a period of seventeen years (Lubrano, *Telegraph*, 16; see also Oslin, *Story of Telecommunications*, 227–31).
68. Lubrano, *Telegraph*, 17.
69. Standage, *Victorian Internet*, 191.
70. Ithiel de Sola Pool and Lloyd S. Etheredge, *Politics in Wired Nations: Selected Writings of Ithiel de Sola Pool* (New Brunswick, NJ: Transaction Publishers, 1998), 170. A line from Boston to New York followed in 1882.
71. Quoted from a 1914 magazine article in ibid., 168.
72. The first communications satellite, Telstar, had been launched in 1962 (Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 403).
73. Lubrano, *Telegraph*, 90–2.
74. This was the date set by the International Maritime Organization for the end of Morse transmissions as distress calls by ships (Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 389).
75. Twenty years before Marconi's transmissions, the principle of "inductive communication" between a wire laid alongside railroad tracks and a receiver system placed inside a moving railcar was known. It was a kind of very short-range radio, as an 1884 experiment in Wales between the island of Anglesey and a local lighthouse demonstrated. A longer-range radio transmission technique developed by the German Heinrich Hertz and eventually adapted by Marconi at the beginning of the twentieth century came to dominate (Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 59–60, 184–92).
76. The air is irrelevant except for interferences such as lightning discharges. The Earth just gets in the way of the radio waves. Lee de Forest's 1907 invention of the audion vacuum tube not only helped long-distance telegraphy and telephony, but also made long-distance radio and, therefore, broadcasting possible (Oliver, *History of American Technology*, 500).
77. Even so, AT&T and General Electric became engaged in a patent war that threatened to halt progress in both radio and telephony until a patent pool was formed between them and others in 1920.
78. See George Gilder, *Microcosm: The Quantum Revolution in Economics and Technology* (New York: Simon & Schuster, 1989), esp. chaps. 1–3.
79. Hafner and Lyon, *Where Wizards Stay Up Late*, 10.
80. Lubrano, *Telegraph*, 160.
81. Hafner and Lyon, *Where Wizards Stay Up Late*, 52, 57–63. The problem was not just switching speeds; analog phone technology distorts sounds, which the human ear cannot pick up, but which are a problem at the speed of digital communication.
82. Ibid., 38, 41.
83. Today, large information companies such as Microsoft and Google use numerous dedicated buildings full of heavy-duty servers located in "server farms" in the countryside.
84. Hafner and Lyon, *Where Wizards Stay Up Late*, 74–136.
85. Roberts, *History of the English-Speaking Peoples since 1900*, 556.

86. The first four servers were installed near the end of 1969 and another seven in 1970. It was not until 1971, however, that true communication was established between the computers (Hafner and Lyon, *Where Wizards Stay Up Late*, 151–4).
87. Ibid., 176.
88. Lubrano, *Telegraph*, 160.
89. Hafner and Lyon, *Where Wizards Stay Up Late*, 191–2.
90. It appears that this choice was made because the symbol was on the teletype keyboard, but not used much. Also, it had the advantage of being a commercial sign for "at," as in "tomatoes@20cents/lb," which could easily be seen as an Internet address as well.
91. Hafner and Lyon, *Where Wizards Stay Up Late*, 194.
92. Ibid., 191.
93. Ibid., 236–49.
94. Ibid., 248–56.
95. Beauchamp and Institution of Electrical Engineers, *History of Telegraphy*, 396–7; Standage, *Victorian Internet*, 193–4.
96. Lubrano, *Telegraph*, 160.
97. Roberts, *History of the English-Speaking Peoples since 1900*, 555. Not surprisingly, a number of others were working toward similar systems, but Berners-Lee had the advantage of being first and having a global, or at least an intercontinental, vision. Also, he was prepared to make his system available to everyone rather than exploit a patent for personal gain. This made it quicker and easier to implement. Few have had more effect on the behavior of the human race (555–6). He relates his experiences in Tim Berners-Lee, *Weaving the Web: Original Design and Ultimate Destiny of the World-Wide Web* (New York: HarperCollins, 1999, 2000).
98. Lubrano, *Telegraph*, 158.
99. Roberts, *History of the English-Speaking Peoples since 1900*, 555.
100. Metcalfe became interested in connecting computers after reading about the Alohanet experiments at the University of Hawaii. He went to work at PARC in Palo Alto, California, and, in 1973, tried to connect Xerox's computers there into a network. He got Xerox and others to make the system he devised, called Ethernet, into an open standard that everyone could use, then left to start 3Com to exploit the demand for related products; see "Technology Quarterly," *Economist*, December 12, 2009, 23–4.

Chapter 18

1. Thomas Pynchon, *Mason and Dixon* (New York: Henry Holt, 1997), 324.
2. Billington, *Westward Expansion*, 292. All three stanzas can be found in Dunbar and May, *Michigan*, 163–5.
3. Linklater, *Measuring America*, 171.
4. George Washington's order to Sullivan is similar to that which sent William T. Sherman off from Atlanta to the sea eighty years later: "it is proposed to carry the war into the heart of the country of the six nations, to cut off their settlements, destroy their next

year's crops . . . so that the country may not only be overrun but destroyed." Sullivan reported at the end of his campaign that his troops had destroyed 40 villages, 160,000 bushels of corn, and acres of fruit trees and other crops (Klees, *People of the Finger Lakes Region*, xiii–xiv).

5. New York was given the sovereignty right, while Massachusetts gained the pre-emption right over the land (Klees, *People of the Finger Lakes Region*, xiv).
6. Billington, *Westward Expansion*, 245; and Klein, *Empire State*, 262.
7. Large parcels were bought by New York City speculators in an auction in 1791, when the State sold 5.5 million acres for a million dollars (Burrows and Wallace, *Gotham*, 335).
8. Billington, *Westward Expansion*, 245.
9. Phelps and Gorham, the speculators, got caught in a classic currency squeeze. They bought the land denominated in Massachusetts currency, which was virtually worthless at the time. Then the federal government announced the assumption of all the States' war debts, and the currency shot up in value, bankrupting them (Klees, *People of the Finger Lakes Region*, xv).
10. Hugill, *Upstate Arcadia*, 18–19.
11. Benjamin Franklin's grandson, William, was Morris's agent in London.
12. Morris's land flips are described in Billington, *Westward Expansion*, 246–7; see also Klein, *Empire State*, 262.
13. The following details of Ellicott's career also come from Patrick Weissend, *The Life and Times of Joseph Ellicott* (Batavia, NY: Holland Land Purchase Historical Society, 2002–3), 2–3.
14. He employed two of his brother Andrew's sons as clerks. They both saw action in the War of 1812. See Catharine van Cortlandt Mathews, *Andrew Ellicott: His Life and Letters* (1908; repr. New York: Ralph Roberts, 2001), 183.
15. At the time, there were only 17,000 people in the whole area of western New York, half of whom were children (Berstein, *Wedding of the Waters*, 122).
16. It had only 2,400 people when the Erie Canal opened in 1825, and by 1850 it was the world's largest grain port (Koeppel, *Bond of Union*, 1, 394).
17. Even in 1800, they were little more than Indian trails (Berstein, *Wedding of the Waters*, 122).
18. Billington, *Westward Expansion*, 248–9.
19. The British authorities in New York had simply made their peace with the *patroons* and eventually outdid them in gaining for themselves large tracts of land (Billington, *Westward Expansion*, 94–5).
20. Ellicott settled in Batavia in 1798 and coordinated the survey from there. His team laid out the town in long, narrow lots. In 1801, the first town lot was sold to an Abel Rowe, and a school teacher settled soon after. Large-scale land sales started in 1802 (ibid., 249). See also Barbara Ann Toal, *Batavia* (Charleston, SC: Arcadia Publishing, 2000), 7–8, 15–19.
21. Half of them, including Ellicott, fled the area when British forces attacked and burned Buffalo and Black Rock on New Year's Eve, 1813.
22. Billington, *Westward Expansion*, 248–59.
23. Ellicott's promotion of the canal involved one of the first land grants to finance a major public transportation work. He persuaded the Company's owners to offer a large tract of land, 100,000 acres, to the State if the canal were built through or near the Company's

holdings rather than go into Lake Ontario, with a barge canal around Niagara Falls, as some were advocating. See Weissend, *Life and Times of Joseph Ellicott* , 16–18.

24. His relationship with the canal is documented in Koeppel, *Bond of Union*, especially 46–52, 59, 122, 138–9, 151, 212, 228–9, 341, 346.
25. Ibid., 144.
26. Ellicott had a political machine in western New York called the "Big Family," which came apart in the face of settler protests over the lack of investment he and the HLC had made in their area. Ellicott, who had earlier resigned from the Erie Canal commission because of ill health, also was forced to resign as the manager (ibid., 346).
27. The first Erie Canal shipping company was opened on the finished portion of the canal in 1820 by two Yankees. It prospered from the start (ibid., 144).
28. In the fall of 1836, the future governor of the State and Abraham Lincoln's and Andrew Johnson's secretary of state, William Seward, was hired by the HLC to be its manager in Chautauqua County, near the Pennsylvania border. He rented a house near the Buffalo-Erie road and worked at land development for about fifteen months, until the Panic of 1837 hit the area. See Goodwin, *Team of Rivals*, 78–80.
29. Stegner and Stegner, *Marking the Sparrow's Fall*, 260.
30. Linklater, *Measuring America*, 4–5.
31. The Astor fur empire in the Pacific Northwest in the early 1800s was built on selling furs directly to China, rather than to New York or Europe.
32. Part of the reluctance to develop colonies originated with the continued troubles the English had in keeping the "wild Irish" subdued. See Howard Mumford Jones, *O Strange New World: American Culture; The Formative Years* (New York: Viking, 1964), chap. 5.
33. In 1774, for instance, Jefferson criticized the King for wanting to introduce feudal land tenures into America, along with the exactions that accompanied them. See Robert Middlekrauft, *The Glorious Cause: The American Revolution, 1763–1789*, rev. ed. (New York: Oxford University Press, 2005), 242.
34. Even so, by 1675, politically connected individuals managed to accumulate holdings of over 130,000 acres, presumably for speculation. See Bernard Bailyn, *The Peopling of British North America: An Introduction* (New York: Alfred A. Knopf, 1986), 67–8.
35. Billington, *Westward Expansion*, 101–2.
36. Ziff, *Puritanism in America*, 83–4, 208–9, 225–6. This eventuality never came to pass, but the British Privy Council did make one policy that had some relevance in post-Revolutionary America. In 1773, the British government restricted the colonial legislatures' right to allocate land, requiring that plots be sold directly and that the sale occur after proper surveys were made, at auction, and with the prices paid made public (Bailyn, *Peopling of British North America*, 73).
37. Billington, *Westward Expansion*, 243.
38. It said, in part: "LAND SURVEYING: Of all kinds, according to the best methods known . . . .Distinct and accurate Plans of Farms furnished . . . .Apply to Henry D. Thoreau, near the depot, Concord Mass."
39. One of the measures of length, a rod, was defined in the 1500s as a "length of exactly 16 . . . shoes from sixteen men, short and tall, one after the other, as they came out of church"; see Joseph T. Stuart, "The Initial Points of Michigan," *Turning the Horizon* 3 (1, 2005): 12.
40. Davis, *Frontier Illinois*, 92.

41. A few quaint usages are still left of this system in North America. Windsor, Nova Scotia, is still referred to locally as the shiretown of Hants County, and Nova Scotian county council chairpersons are called reeves. The old Anglo-Saxon word shire-reeve, meaning the chief officer of a shire, was transformed into the office of sheriff, still in common usage for a county's chief law enforcement officer.
42. This basic outline is derived from Billington, *Westward Expansion*, 78–9, and from a genealogy website for New Hampshire and Vermont settlers, http://www.skinnerwebb.com.
43. Billington, *Westward Expansion*, 204–5.
44. The squatters refused to obey government eviction orders and simply melted into the woods at the approach of any soldiers. This drama in futility was to be re-enacted all across the frontier (Hurt, *Ohio Frontier*, 144, 146). As the land became organized, squatters clamored for a pre-emption law giving them the right to keep what they were using. Where there were land auctions, squatting became a rational response, as such people often did not have the capital to outbid speculators and the rich for good lands. At first, in 1807, there were attempts to threaten squatters with fines or prison (Linklater, Measuring America, 166), but then a reaction set in, and a law was passed in 1813 allowing a 160-acre pre-emption. Other laws on squatting were passed in 1830 and 1841 (Davis, *Frontier Illinois*, 143; Landes, *Wealth and Poverty of Nations*, 319–20).
45. This contained what are now the seven States of Ohio, Indiana, Illinois, Michigan, Wisconsin, Iowa, and Minnesota.
46. Davis, *Frontier Illinois*, 93.
47. Part of the value of the Gunter chain in early America was that it allowed for a conversion of the base 4 Anglo-Saxon method of measurement to the base 10 used in modern times.
48. Linklater (*Measuring America*, 2) opens with a present-day trip to the "Point of Beginning."
49. Much of his team was from New England, and the first township to be surveyed was called Township 5 of the First Range. Jared Mansfield, the surveyor general from 1803 to 1812, established a First Principal Meridian on the western edge of Ohio that served as a base for a more regular survey westward than the patches of granted lands and different types of survey constants in Ohio would allow (ibid., 161). There are many descriptions of the process in the literature; see, for instance, Billington, *Westward Expansion*, 205.
50. Davis, *Frontier Illinois*, 94. The Ohio Company's advice played a large part in the design of the Northwest Ordinance governing the Territory.
51. For an account of how the ordinance was drafted and the dealmaking that went behind it, see Dunbar and May, *Michigan*, 94–5. Some of the thinking behind the ordinance is spelled out in Linklater, *Measuring America*, 82–3.
52. Hurt, *Ohio Frontier*, 156–7.
53. Ibid., 168.
54. One of the key players was Rufus Putnam, a military officer in the French and Indian War and an American general in the Revolutionary War. Between these wars, he was a millwright and a self-educated surveyor, doing surveys of the Gulf Coast and the Mississippi River lands, where New England veterans had been allotted land by the British. During the Revolution, Washington made him his chief engineer in New York; he proposed unsuccessfully that Congress create a Corps of Engineers. After the war, he

surveyed parts of Maine and was one of the founders of the Ohio Company. He had been told about the area by Washington a decade earlier. Putnam went to the purchased land with the first group of settlers. In 1796, he was made the first surveyor general of the United States, holding the position until 1803.

55. Hurt, *Ohio Frontier*, 156.
56. Davis, *Frontier Illinois*, 260. Squatting tended to gradually die out in the more orderly North, but in the South the inability to settle land claims and provide a regular means of guaranteeing ownership led to its increase, with the consequent disinterest by squatters in property development (Linklater, *Measuring America*, 152).
57. For a brief summary, see John S. Dailey, "Fabric of Surveying: Ohio Lands and Survey Systems," *American Surveyor*, November 30, 2004; available online at http://www.amerisurv.com/content/view/3962/150/.
58. The money was invested to assist schools in the State; the proceeds were used for this purpose at least until the late twentieth century.
59. See Ted Heineman, "Surveying the Western Reserve," *Riverside Cemetery Journal* (2009); available online at http://riversidecemeteryjournal.com/Events/Events/page195.html.
60. Miller and Wheeler, *Cleveland*, 7–8.
61. Besides personal security, there was the additional complication that the sale by Connecticut seemed to transfer governing jurisdiction to the Company, something not resolved in favor of the federal government until 1800. Also, a number of Pennsylvania speculators had sold property in the Reserve and resultant title disputes then had to be settled (Hurt, *Ohio Frontier*, 164–6; see also Billington, *Westward Expansion*, 254).
62. Hurt, *Ohio Frontier*, 164–9. It had done almost nothing to develop the land (Pierson, *Tocqueville in America*, 10).
63. The last straw of what Jefferson called "dabbling in the federal filth" (using depreciated money to speculate in land) was the Symmes failure, on lands that today are around Cincinnati (Hurt, *Ohio Frontier*, 164).
64. For instance, four offices were established in Ohio in 1800 (Johnson, *History of the American People*, 296).
65. Hutchins died in 1789, before the Seven Ranges survey was complete. A 1796 act finalized the system for surveying and selling land in the United States along the lines laid down by Hutchins. It even specified the use of Gunter's chain in measurement and applied to all land measurement in the Northwest (Linklater, *Measuring America*, 142).
66. Details of the 1785 Land Ordinance may be seen online at http://www.ohiohistorycentral.org/entry.php?rec=174.
67. With the first year's subsistence, housing costs, and fencing, the total could reach $2,000 a year, a sum that was out of reach for most of those coming to the frontier (Linklater, *Measuring America*, 163–6). By 1832, the minimum was reduced to forty acres.
68. Davis, *Frontier Illinois*, 157–8.
69. Hurt, *Ohio Frontier*, 168–9, 173.
70. Section 16 in each township was to be used for public education, and sections 8, 11, 26, and 29 were reserved for Revolutionary War veterans, a scheme later abandoned as the warrants for veterans were used up (Dunbar and May, *Michigan*, 94; Hurt, *Ohio Frontier*, 144).

71. The problem was that government prices for adjoining land kept the profit potential down. Town swindles were a favored alternative (Billington, *Westward Expansion*, 285).
72. Linklater, *Measuring America*, 174.
73. Faragher, *Rereading Frederick Jackson Turner*, 49–52.
74. See Dunbar and May, *Michigan*, 154–5; another excellent source is the Michigan Museum of Surveying, in Lansing.
75. A concise version of the process is Stuart, "Initial Points of Michigan," 12–13.
76. Dunbar and May, *Michigan*, 154.
77. The terms were good: 5 percent down to hold the land for forty days, when another 20 percent was due and the rest on a mortgage, interest free for three years. Reversion could occur only if the purchaser had been delinquent for five years, so the mortgage was effectively for eight years (Davis, *Frontier Illinois*, 157–8).
78. The first sales were auctions in Detroit in 1818 (Dunbar and May, *Michigan*, 155).
79. The first steamship on the lakes was the *Walk-in-the-Water*, launched in 1818.
80. A number of acts were signed in the late 1800s to assist settlers in taking less-desirable pieces of land; see Stegner and Stegner, *Marking the Sparrow's Fall*, 173; and Johnson, *History of the American People*, 525.
81. Linklater, *Measuring America*, 226.
82. Land grants and railroads make a complex and interesting story; see, for instance, ibid., 183–7.
83. Ibid., 224.

Chapter 19

1. Rachel Carson, *Silent Spring* (1962; New York: Houghton Mifflin, 2002), 3.
2. Quoted in Pierre Berton*, Niagara: a History of the* Falls (Toronto: McClelland & Stewart, 1992), 419.
3. Patrick McGreevy, *Imagining Niagara: The Meaning and Making of Niagara Falls* (Amherst: University of Massachusetts Press, 1994), 2–3.
4. Berton, *Niagara*, 44–5.
5. Ibid., 46–7. Porter still was not averse to charging visitors for access and the building of a bridge to Goat Island.
6. William R. Irwin, *The New Niagara: Tourism, Technology, and the Landscape of Niagara Falls, 1776–1917* (University Park: Pennsylvania State University Press, 1996), 27–9; and McGreevy, *Imagining Niagara*, 108
7. McGreevy, *Imagining Niagara*, 108.
8. Irwin, *New Niagara*, 29. The discrepancy got wider until, by 1890, there were 5,000 people in Niagara Falls, but 250,000 in Buffalo (McGreevy, *Imagining Niagara*, 110).
9. McGreevy, *Imagining Niagara*, 34. It was done at the urging of a Canadian archbishop.
10. Ibid., 37.
11. Ibid., 84.

12. One version has it that the group and the plan were devised in the prestigious Century Club in New York City. See Ginger G. Strand, *Inventing Niagara: Beauty, Power, and Lies* (New York: Simon & Schuster, 2008), 142–3. Another places it in a stroll on Goat Island in 1869 (Berton, *Niagara*, 178–80).
13. Strand, *Inventing Niagara*, 148. A similar Canadian process was also under way. There had been considerable cooperation between advocates on both sides of the border (Berton, *Niagara*, 182–6).
14. Irwin, *New Niagara*, 67. By 1887, both the American and Canadian shores of the Falls and lower river had been reserved for parkland.
15. Ibid., 84.
16. Ibid., 76–7.
17. Ibid., 227.
18. Ibid., 99.
19. Berton, *Niagara*, 202–28.
20. The quiet elegant hum of the turbines became a popular tourist destination in itself (Irwin, *New Niagara*, 122; see also Strand, *Inventing Niagara*, 167).
21. McGreevy, *Imagining Niagara*, 107, 113.
22. The just reelected President William McKinley was assassinated there while standing in a reception line.
23. He claimed to have single-handedly settled 15,000 people in what is now Guthrie, Oklahoma, during the 1880s land rush there; *Niagara Falls Gazette*, March 3, 1942.
24. Based on a calculation of five people per horsepower generated by the canal and used by associated factories (Irwin, *New Niagara*, 144).
25. Ibid., 145.
26. McGreevy, *Imagining Niagara*, 120–1.
27. Ibid., 121.
28. David Germain, "Dream that drowned in Love Canal," *Buffalo News*, June 6, 1993.
29. Love had planned his canal to be a ship canal as well, to compete with the Welland Canal on the Canadian side, which had been completed in 1829 as a means of keeping British lake trade from being diverted from the Lake Ontario/St. Lawrence River system to the Erie Canal.
30. Strand, *Inventing Niagara*, 172–3.
31. Tim Dowling, *King Camp Gillette, 1855–1932: Inventor of the Disposable Culture* (London: Faber & Faber, 2002).
32. Berton, *Niagara*, 231–4.
33. McGreevy, *Imagining Niagara*, 105
34. Originally called the "United Company" and in later writings the "World Corporation"; see Irwin, *New Niagara*, 142.
35. McGreevy, *Imagining Niagara*, 125
36. Irwin. *The New Niagara*, 101,161. An earlier exhibition in Frankfurt, Germany, in 1891 had been powered by alternating current sent 100 miles over wires. *Ibid.,* 109
37. McGreevy, *Imagining Niagara*, 131
38. Ibid., p.135
39. Today, the amount of water going over the Falls can be adjusted to provide a pretty scene by day, with extra water being diverted at night for power generation.

40. The Robert Moses Parkway was built along the river, effectively cutting off Olmstead's Reservation from the rest of the city except for a pedestrian overpass. Strand, *Inventing Niagara*, 263.
41. Ibid., 174–5.
42. Ibid., 225–9, 243–4. Radioactive sludge and waste, including dead animals used in plutonium experiments, was sent from all over the United States to the Model City area for storage.
43. Ibid., 176, 179. The site of a large munitions factory built during the Second World War has been turned into Chemical Waste Management's "Model City Facility," the only hazardous waste dump in the Northeast (Strand, *Inventing Niagara*, 241).
44. Michael Desmond, "'Model community' dream haunts Love Canal residents," *Buffalo Courier-Express*, August 6, 1978.
45. Lois Marie Gibbs, *Love Canal: The Story Continues* (Gabriola Island, BC: New Society Publishers, 1998), 22.
46. Strand, *Inventing Niagara*, 195.
47. A 1948 *Saturday Evening Post* article noted the smog over the town, which "is sniffed happily by the industrially-minded" (quoted in ibid., *Inventing Niagara*, 179).
48. Gibbs, *Love Canal*, 21.
49. Rick Atkinson, *Day of Battle* (New York: Henry Holt, 2007), 448.
50. Much of the biographical material on Carson is condensed from Linda Lear's "Introduction" to Carson, *Silent Spring*.
51. See, for instance, a retrospective by John Tierney, "Fateful voice of a generation drowns out real science," *New York Times*, June 5, 2007.
52. See Smithsonian Institution Archives, "Robert H. Goddard: American Rocket Pioneer" (Washington, DC, n.d.), available online at http://siarchives.si.edu/history/exhibits/stories/robert-h-goddard-american-rocket-pioneer; see also Clark University, Archives and Special Collections, "Robert Hutchings Goddard Biographical Note" (Worcester, MA, n.d.), available online at http://www.clarku.edu/research/archives/goddard/bio_note.cfm; and National Museum of the US Air Force, "Dr. Robert H. Goddard: 'The Father of Modern Rocketry'" (Wright-Patterson AFB, OH, 2009), available online at http://www.nationalmuseum.af.mil/factsheets/factsheet.asp?id=12374.
53. The *New York Times* published a retraction of a mocking editorial page article almost fifty years later, after the launch of the Apollo XI mission; see "A severe strain on credulity," *New York Times*, January 13, 1920, 12; and "A correction," *New York Times*, July 17, 1969, 43.
54. Bob Ward, *Dr. Space: The Life of Werner von Braun* (Annapolis, MD: Naval Institute Press, 2005), 226.
55. See, for instance, Foreman, *Confessions of an Eco-Warrior* , 196; Kaplan, *Empire Wilderness*, 296; and Bishop Jr., *Epitaph for a Desert Anarchist*, 205.
56. Gibbs, *Love Canal*, 91.
57. Ibid., 47. About this time, the local media became aware of the problems, but the health authorities continued to deny there were any issues with smell and seepage, even though the State had ordered corrective action be taken; see Berton, *Niagara*, 417–18.
58. Ibid., 419–20.

59. The story of the residents' organizing and pressuring government to take appropriate action is the core of Gibbs, *Love Canal*; see also Berton, *Niagara,* 420-439 for a condensed version.
60. Gibbs, *Love Canal*, 9.
61. Strand, *Inventing Niagara*, 224–5. None of the Niagara area sites was ever mentioned in connection with the Manhattan Project, but they played a key role in it.
62. The first apparently was in Telluride, Colorado, in 1891, and the second in Germany shortly thereafter; see Wershler-Henry, *Iron Whim*, 270.
63. McGreevy, *Imagining Niagara*, 159.

Chapter 20

1. David Ewen, ed., *American Popular Songs from the Revolutionary War to the Present* (New York: Random House, 1966, 239. Contrary to what one might think, "Buffalo Gals" is not a "cowboy song," but refers to the prostitutes at the terminus of the Erie Canal.
2. Quoted in the history of the Carrier company on the Web site of its current owners, United Technologies, http://www.corp.carrier.com/vgn-ext-templating/v/index.jsp?vgnextoid=4455d66bdcb08010VgnVCM100000cb890b80RCRD&cpsextcurrchannel=1.
3. Raymond Arsenault, "The End of the Long Hot Summer: The Air Conditioner in Southern Culture," *Journal of Southern History* 50 (4, 1984): 598.
4. David Shi, "Air conditioning — It's made the south what it is," *Independent-Mail* (Anderson, SC), June 24, 2007; available online at http://www.independentmail.com/news/2007/jun/24/air-conditioning-its-made-south-what-it/.
5. The layout was similar to that of Washington, DC, not surprising given the involvement of Joseph Ellicott's brother Andrew in the planning of that city; see David M. Ellis and Sherri Goldstein Cash, *New York State: An Illustrated History* (Sun Valley: CA: American History Press, 2008), 166.
6. Berstein, *Wedding of the Waters*, 286–91. In 1810, DeWitt Clinton, then mayor of New York City, scorned Buffalo in 1810 for having "5 lawyers and no church."
7. The *Walk-in-the-Water*, a combination of sailing ship and steamer able to accommodate a hundred passengers, was built in Black Rock in 1818. She embarked on her maiden voyage on August 23 that year with twenty-nine passengers, who paid $24 each to go to Detroit, a trip that took 44 hours and 10 minutes, including stops at Erie, Pennsylvania, and Cleveland and Sandusky, Ohio. She was destroyed in a storm on November 21,1821, though her engine was saved and reused. See Rockne P. Smith, *Our "Downriver" River: Nautical History and Tales of the Lower Detroit River* (Gibraltar, MI: Rockne Smith, 1997), 11–12.
8. Berstein, *Wedding of the Waters*, 349.

9. For a good survey of the growth of Buffalo industry until the early twentieth century, see Robert Holder, "The Beginnings of Buffalo Industry," in *Adventures in Western New York History*, vol. 5 (Buffalo, NY: Buffalo and Erie County Historical Society, n.d.); available online at http://bechsed.nylearns.org/pdf/The_Beginning_of_Buffalo_Industry.pdf.
10. See Levy, *American Vertigo*, 40.
11. The prime source is Margaret Ingels, *Willis Haviland Carrier, Father of Air Conditioning* (New York: Arno Press, 1972), chap. 1.
12. Ingels might not have been a great biographer, but she deserves a biography herself; see Marsha E. Ackermann, *Cool Comfort: America's Romance with Air-Conditioning* (Washington, DC: Smithsonian Institution Press, 2002), 105–6. Ingels was the first woman to receive a mechanical engineering degree from an American university, graduating in 1916 from the University of Kentucky, the same university Willis Carrier's life-long friend Irvine Lyle attended. She spent four years with Carrier before joining the research staff of the American Society of Heating and Ventilating Engineers. She returned to Carrier in 1929, and retired in 1952; see the history of the Carrier company on the Web site of its current owners, United Technologies, at http://www.corp.carrier.com/vgn-ext-templating/v/index.jsp?vgnextoid=35070d9653b08010VgnVCM100000cb890b80RCRD&cpsextcurrchannel=1.
13. Cooper, *Air-Conditioning America*, 192n34.
14. http://freepages.genealogy.rootsweb.ancestry.com/~carrier/gramps/ppl/1/c/bca41937b2232acb6c1.html.
15. Ingels, *Willis Haviland Carrier*, 6. A different source places the marriage in 1893 in Buffalo; see M. Tifft, "A Partial Record of the Descendants of John Tefft, of Portsmouth, Rhode Island, and a Nearly Complete Record of the Descendants of Text of John Tifft, of Nassau, New York" (Buffalo, NY: Peter Paul Book Company, 1896); available online at http://www.archive.org/stream/apartialrecordd00tiffgoog/apartialrecordd00tiffgoog_djvu.txt, 372.
16. Tifft, "Partial Record," 405.
17. Oscar E. Anderson Jr., *Refrigeration in America* (Princeton, NJ: Princeton University Press, 1953), 71. The Egyptians may have been the first to recognize that a fan dipped in water could produce cool air as a result of evaporation. Carrier air conditioned the Egyptian parliament in 1937 with more modern technology. Apparently, the Chinese had invented a rotary fan by A.D. 200 and a water-powered one 500 years later, but the concept was then "lost" until reinvented around 1800.
18. So-called swamp coolers were commonly used to cool rooms and patios in Arizona until the late 1980s,
19. The first export of New England ice was from Boston to Martinique in 1806; see Anderson Jr., *Refrigeration in America*, chap. 1. See also Barbara Krasner-Khait, "The Impact of Refrigeration," *History Magazine*, February-March 2000; and Bill Bryson, *At Home: A Short History of Personal Life* (New York: Doubleday, 2010), 71–3.
20. Cooper, *Air-Conditioning America*, 8. Gorrie received a patent for his process in 1851, but died before he was able to commercialize it. See James V. Warren, "John Gorrie," *Transactions of the American Clinical and Climatological Association* 93 (1982): 183–8; available online at

http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2279554/pdf/tacca00096-0227.pdf?tool=pmcentrez. See also Anderson Jr., *Refrigeration in America*, 71.

21. C.P. Arora, *Refrigeration and Air Conditioning* (1981; New York: McGraw-Hill, 2000), 477.
22. Cooper, *Air-Conditioning America*, 13–15.
23. Oliver (*History of American Technology*, 415) claims, however, that neither of these projects resulted in a satisfactory outcome.
24. Cooper, *Air-Conditioning America*, 1. The debate over natural ventilation versus a standardized, air-conditioned environment would continue. Yet standardization and mechanization have been central to the Yankee experience.
25. She had been taken in by the Carriers after the death of her father, Harry Moor, one of Carrier's associates in a number of his inventions, including the centrifugal compressor. See the history of the Carrier company on the Website of its current owners, United Technologies, http://www.fatherofcool.carrier.com/corp/details/0,,CLI1_DIV51_ETI3579,00.html.
26. Much of the material on Carrier's career is taken from Ingels, *Willis Haviland Carrier*.
27. Cooper, *Air-Conditioning America*, 23.
28. In fact, although the term had not been invented yet, the first air conditioner went into service in Brooklyn on July 17, 1902; Carrier would not receive his patent until 1906. See Arora, *Refrigeration and Air Conditioning*, 477.
29. Spraying air had been tried in textile mills as early as 1838; see Oliver, *History of American Technology*, 415.
30. Carrier's first client for this apparatus was a bank in La Crosse, Wisconsin. By 1907, his apparatus had been installed in a silk mill in Yokohama, Japan.
31. The term "air-conditioning" had been popularized in 1906 by Stuart Cramer, a specialist in air problems related to textile mills. I. Hardeman, a Buffalo Forge engineer, picked up the term while installing one of CACC's systems in a North Carolina textile mill and it found its way into the new company's name (Cooper, *Air-Conditioning America*, 19). Cramer had used the term for years, but it only became popular after he mentioned it in a paper delivered to the National Cotton Manufacturing Society; see Samuel E. Kronick, "Air Conditioning: A Conflict of Environmental Control" (course material prepared for STS-001-Technology in American History, Massachusetts Institute of Technology, May 14, 2009), 2.
32. Kronick, "Air Conditioning," 2–3.
33. Ibid., 5. "Cool comfort" in movie theaters allowed for multiple showings per day in the summer, as well as providing hot customers with a cool bonus besides the entertainment. As a kid in the 1950s going to the Della Theater in Flint, Michigan, for a double feature and some serials on hot Saturday afternoons, I remember the "coolth" almost more than I do the plots of Ming the Merciless.
34. Ackermann, *Cool Comfort*, 51–7.
35. See William P. Barrett, "Willis Carrier's Ghost," *Forbes*, May 29, 2000, 152–62; and Cooper, Air-Conditioning America, 137.
36. Ackermann, *Cool Comfort*, 58–61. Martin (*Railroads Triumphant*, 89) illustrates some of the social complexities this engendered and solved. See also Anderson Jr., *Refrigeration in America*, 308.

37. A possible example is the USS *Perch*, launched in 1936 and lost in the Pacific; see Kevin Denlay, "On Eternal Patrol: The Unexpected Discovery of the USS Perch SS-176," *Advanced Diver Magazine*, n.d.; available online at http://www.advanceddivermagazine.com/articles/perch/perch.html.
38. Ackermann, *Cool Comfort*, 81.
39. Quoted in ibid., 80.
40. Technically, it was not a room or home air conditioner but a winter gas heater with an automatic humidifier (Cooper, *Air-Conditioning America*, 114). The first true window unit was left to others to create.
41. Annual production rose from 1,000 units in 1945 to 1.3 million units in 1956 (ibid., 143). For a history of the expansion of air conditioning in housing in the latter half of the twentieth century, see Jeff Biddle, "Explaining the Spread of Air-conditioning, 1955–1980," *Explorations in Economic History* 45 (4, 2008): 402–23.
42. J.D. McConnell, "Power Distribution in Textile Plants," *Electrical Engineering* 66 (7, 1947): 667–9.
43. Raymond A. Mohl, ed,. *Searching for the Sunbelt: Historical Perspectives on a Region* (Knoxville: University of Tennessee Press, 1990); Ackermann, *Cool Comfort*, 162.
44. Shi, "Air-conditioning." In 1951, the Carrier company built demonstration subdivision houses in Louisiana, Virginia, and Texas to spur air-conditioned home sales in the South.
45. Kronick, "Air Conditioning," 6.
46. Stan Cox, "AC: It's not as cool as you think," *Los Angeles Times*, July 18, 2010; available online at http://articles.latimes.com/print/2010/jul/18/opinion/la-oe-cox-ac-20100718.
47. Shi, "Air-conditioning."
48. Arsenault, "End of the Long Hot Summer," 598–9.
49. Southern commentators have often speculated on what urban growth in the region might have looked like without air conditioning — none of them is positive
50. A *New York Times* editorial noticed this as early as 1970; see Arsenault, "End of the Long Hot Summer," 599.
51. Quoted in ibid., 628.
52. "The Most Influential Innovations of the Millennium," *Wall Street Journal*, 11 January 11, 1999.
53. Russell Hitchings and Shu Jun Lee, "Air Conditioning and the Material Culture of Routine Human Encasement: The Case of Young People in Contemporary Singapore," *Journal of Material Culture* 13 (3, 2008): 254–5.
54. The world's largest producer of air-conditioning units is now LG Electronics in South Korea.
55. One example is the popularity of rum as a drink. Formerly restricted in popularity to certain geographic areas, the rise in Caribbean tourism due to air conditioning has spread its use to new areas. See "All about Rum," Beverage Testing Institute; available online at http://www.tastings.com/spirits/rum.html.
56. In the early 1950s, *House Beautiful* magazine launched a campaign advocating a more diverse and open ventilation for house design that did not require air conditioning; its influence, however, was minimal (Ackermann, *Cool Comfort*, 111–22).
57. Ackermann, *Cool Comfort*, 138–9. For a review of Miller's book, see Dan Geddes, "Henry Miller's 'On the Road'," *Satirist*, July 2002; available online at

http://www.thesatirist.com/books/Air-Conditioned-Nightmare.html. The inspiration for the title of his book might have come from his visit of Frank Lloyd Wright's air-conditioned Johnson Wax Building in Racine, Wisconsin; he hated it.

58. Quoted in Arsenault, "End of the Long Hot Summer," 606–7n34. For a survey of air conditioning Washington, see Ackermann, *Cool Comfort*, chap. 4. Roberts (*History of the English-Speaking Peoples since 1900*, 186) notes that novelist Gore Vidal said much the same thing earlier.