



PROJECT MUSE®

---

## Migraine

Foxhall, Katherine

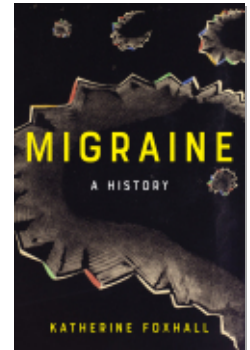
Published by Johns Hopkins University Press

Foxhall, Katherine.

Migraine: A History.

Baltimore: Johns Hopkins University Press, 2019.

Project MUSE., <https://muse.jhu.edu/>.



➔ For additional information about this book

<https://muse.jhu.edu/book/66229>

*Note on Terminology and Names*

1. Kempner, *Not Tonight*, 102; Young, “De-stigmatizing Migraine.”

*Chapter 1 • Introduction*

1. Pac-Man gained the status of a cultural icon of the video game era in the early 1980s, particularly as Namco’s designers deliberately designed the game to appeal to women, as well as men, by avoiding the standard shooting format of other popular games, such as *Space Invaders*.

2. Ludmilla Jordanova has noted that artists who paint self-portraits often show a vivid historical awareness at the same time as they reflect preoccupations in the here and now. See Jordanova, “Body of the Artist,” 45.

3. Rose, “History of Migraine,” 1–3.

4. Other words from the early modern period include the following: *migram*, *migrime*, *meagrim*, *mygrame*, *meigrame*, *megryme*, *meagrom*, *meegreeme*, *mygryme*, *migrin*, *migrine*, *mygrime*, and *mygrim*.

5. Allbutt, “Clinical Lecture,” 203.

6. For the current internationally accepted, research-driven definitions of migraine and other headache disorders, see Headache Classification Subcommittee, *International Classification of Headache Disorders*, 3rd ed. [hereafter cited as *ICHD-3*]. For a useful overview of current understandings and issues relating to headache disorders, including migraine, see World Health Organization, “Headache Disorders.”

7. *AL Kennedy’s Migraine*, radio program.

8. Carrington, *Rudyard Kipling*, 75.

9. Headache Classification Subcommittee, *ICHD-3*, 8–9; Puledda and Goadsby, “An Update,” 2031–2039; Steiner et al., “GBD 2015,” 104–107.

10. Buse et al., “Sex Differences,” 1279–1280.

11. National Migraine Centre website, “Migraine and Headaches.”

12. Maniyar and Goadsby, “Migraine—Some Theories and Controversies,” 19–21, 25.

13. Lipton et al., “Headache,” 49–50.

14. Headache Classification Subcommittee, *ICHD-3*, 18–22. Other, less common forms of migraine with aura include migraine with brainstem aura and hemiplegic migraine, which includes motor weakness as well as headache and aura symptoms.

15. Moisse et al., “Grammy Reporter.”

16. Buse et al., “Sex Differences,” 1279–1280; Woldeamanuel and Cowan, “Migraine Affects 1 in 10,” 307.

17. MacGregor, “Menstrual Migraine,” 17–23; MacGregor et al., “Sex-Related Differences,” 852.

18. Abu-Arafah et al., “Prevalence,” 1088–1097.

19. Burch et al., “Prevalence and Burden,” 21–34.

20. Kempner, *Not Tonight*, 103–104.

21. Kempner, “Invisible People.”

22. Bendelow, *Pain and Gender*; Canning, “Body as Method?”; L. Smith, “An Account.”

23. There is a diverse body of literature on pain from a range of disciplinary approaches. A classic study is Scarry, *Body in Pain*. Significant historical studies include Bending, *Representation of Bodily Pain*; Bourke, *Story of Pain*; E. Cohen et al., *Knowledge and Pain*; Moscoso, *Pain*. I have found Drew Leder’s phenomenological approach particularly thought provoking in Leder, *Absent Body*.

24. Kamen, *All in My Head*, 86–89.
25. Kempner, *Not Tonight*, xii; Migraine Trust, “Diagnosis and Management.”
26. Olesen et al., “Funding,” 995.
27. National Institutes of Health, “Estimates of Funding.”
28. Kempner, *Not Tonight*, 6, 10–14.
29. Kempner, *Not Tonight*, 12.
30. Pressman, *Last Resort*, 415.
31. For an example of the combative language used in this rejection, see Goadsby, “Vascular Theory.” On the segregation of blood from modern neurological representations of the brain, see Martin, “Blood and the Brain.”
32. Edvinsson, “Trigeminovascular Pathway,” 48, 50; Moskowitz, “Holes.”
33. Duden, *Woman beneath the Skin*; Kassell, “Casebooks”; Pilloud and Louis-Courvoisier, “Intimate Experience”; Risse and Warner, “Reconstructing Clinical Activities.” A number of projects have placed digitized casebooks and correspondence online. See The Casebooks Project; The Cullen Project; The Sloane Letters Project.
34. Jacyna and Casper, *Neurological Patient*, vii; Porter, “Patient’s View,” 182–183.
35. On the use of historical visual material, see Jordanova, *Look of the Past*. On medical imagery, see P. Hansen, *Picturing Medical Progress*; Latour, “How to Be Iconophilic.”
36. Levy, *A Brain Wider*, 99.
37. In this approach, I am indebted to the social and cultural historians of medicine who, since the 1960s and 1970s, have shied away from a focus on medicine’s “great men” and instead attempted to reconstruct how communities and individuals in the past have responded socially, politically, and culturally to illnesses and epidemics. For discussions of this field, see, for example, Jordanova, “Social Construction”; Rosenberg, “What Is Disease?”; Rosenberg and Golden, *Framing Disease*.
38. I discussed my approach to migraine in the “Note on Terminology and Names” at the beginning of this book. On terminology more generally, see Boyd, “Disease, Illness,” 9–17; Carel, *Illness*; Cooper, “Disease.”
39. Methodological discussions of retrospective diagnosis include C. Bynum, *Holy Feast*; Latour, “On the Partial Existence”; McGough, “Syphilis.”
40. There is a large body of literature on the history of disease. For good introductions to some of the methodological issues, see Cunningham, “Identifying Disease”; M. Jackson, “Perspectives.”
41. Coleborne, *Madness*, 125. Studies of such disorders include Anderson and Mackay, *Intolerant Bodies*; M. Jackson, *Allergy*; Murray, *Multiple Sclerosis*; M. Smith, *Another Person’s Poison*.
42. Fee and Fox, *AIDS*; Moore, “Reorganising Chronic Disease Management”; Peitzman, *Dropsy, Dialysis, Transplant*; Talley, *History of Multiple Sclerosis*; Weisz, *Chronic Disease*.
43. Cunningham, “Identifying Disease,” 13.
44. Lawlor, *From Melancholia*, 2–5.
45. Mukherjee, *Emperor*, xvii.
46. M. Jackson, *Asthma*, 10–12, 200–201.
47. A. Wilson, “On the History,” 273, 283.
48. On diagnosis, see Cunningham, “Identifying Disease”; Stein, “‘Getting’ the Pox,” 53–60.
49. On the fraught relationship between social construction and biological reality, see Arizabalaga, “Problematizing.”
50. Studies of headache and migraine from a neurological viewpoint include Diamond and Franklin, *Headache*; Eadie, *Headache*; Pearce, “Historical Aspects”; Rose, “History of Migraine.” In addition, Levy, *A Brain Wider*, contains considerable historical material; Kempner, *Not Tonight*, covers nineteenth- and twentieth-century material, particularly relating to gender.

51. Eadie, *Headache*, 73.
52. Eadie, *Headache*, 268.
53. Puledda and Goadsby, “An Update.”
54. Gorsky, “Sources and Resources”; Hampshire and Johnson, “Digital World.”
55. Kassell, “Paper Technologies.”
56. Literature on history writing and digitization is a rapidly emerging field. Some good introductions to the ethical, practical, and methodological questions historians need to consider include Jordanova, “Historical Vision”; Weller, *History in the Digital Age*.
57. Hitchcock, “Confronting the Digital.”
58. I discuss some of these issues further in Foxhall, “Digital Narratives.”

### Chapter 2 · The “Beating of Hammers”

1. “*Leechbook. Book 1*,” in Cockayne, *Leechdoms*, 21–23 [hereafter cited as Bald’s *Leechbook*]. The original Middle English text reads: “Wip healfes heafdes ece: genim þa readan netlan anstelede, getrifula, meng wið eced 7 æges pæt white, do eall togædere, smire mid. / Wip healfes heafdes ece: laures croppan getrifula on eced mid ele, smyre mid py pæt wenge. Wið þon ilcan genim rudan seaw, wring on pæt næpyrel pe on þa [s]aran healf bið. Wip healfes heafdes ece: genim laures croppan dust 7 senap, meng togædere. Goet eced on, smire mid þa saran healf mid py.”

2. Bald’s *Leechbook*, 21–23.
3. Cameron, “Bald’s *Leechbook*,” 153; C. Wright, *Bald’s Leechbook*, ff. 7v, 8r.
4. Banham, “Dun, Oxa, and Pliny,” 57–73; Crawford, “Nadir,” 46.
5. Deegan, “Critical Edition,” vol. 1, xxxvii–xxxix.
6. Cameron, *Anglo-Saxon Medicine*, 5–18; Crawford, “Nadir,” 43.
7. For more on this organizing principle, see Demaitre, *Medieval Medicine*, xi–xii.
8. Cameron, *Anglo-Saxon Medicine*, 82–83. See also Adams and Deegan, “Bald’s *Leechbook*,” 88.
9. Bald’s *Leechbook*, 83.
10. Deegan, “Critical Edition,” vol. 1, xxv.
11. Other influences include the fifth-century *Herbarium of Pseudo-Apuleius*, a text that was widely disseminated across Europe; sixth-century Greek physician Alexander of Tralles; and Oribasius, the fourth-century author of seventy books and physician to the Roman emperor. See Deegan, “Critical Edition,” vol. 1, vxiii–xxvii; Van Arsdall, *Medieval Herbal Remedies*, 35.
12. Pearce, “Historical Aspects,” 1098.
13. On humors, see Arikha, *Passions and Tempers*, 6–10; Rawcliffe, *Medicine and Society*, 32–34.
14. Rawcliffe, *Medicine and Society*, 54; Wear, *Knowledge and Practice*, 65, 78, 88–92.
15. Crawford, “Nadir,” 46.
16. Ghalioungui, *Ebers Papyrus*, entry no. 250, 83.
17. Rose, “History of Migraine,” 1.
18. W. Smith, *Hippocrates*, 207.
19. Koehler and van de Wiel, “Aretaeus,” 256.
20. Lu and Needham, *Celestial Lancets*, 118. The authors identify the point as modern day R1, indicated for similar disorders.
21. Lu and Needham, *Celestial Lancets*, 129. *Pai-hui* corresponds to modern day GV20, or “hundred meeting point” on the top of the skull. More recently, the authors explain, there has been an increase in the number of acupuncture points that are not indicated on any of the traditional tracts, and these have been found to be valuable in treating a number of disorders, including migraine. In addition, the known power of acupuncture in treating afflictions such as migraine and arthritis has led to its use for pain relief during surgical operations since the 1950s. See Lu and Needham, *Celestial Lancets*, 163–164, 200.

22. E. Wallis, *Medieval Medicine*, 17.
23. Horden, "What's Wrong," 11.
24. E. Wallis, *Medieval Medicine*, 18–19.
25. On Hildegard's authorship of *Causae et Curae*, see Sweet, *Rooted in the Earth*, 35–49.
26. Throop, *Causes and Cures*, 74–75, 135.
27. "Recette contre la migraine," in Wickersheimer, "Textes médicaux chartrains," 166. I am grateful to Prof. Anne Duggan for translation from the Latin.
28. Pughe, *Physicians of Myddvai*, 339.
29. Fabbri, "Treating Medieval Plague," 176–177.
30. Van Arsdall, *Medieval Herbal Remedies*, 47–48.
31. Original text: "The heed is greued wipinne wip an ache and an yuel pat phisicians clepip emigranea. So seip Constantinus. And as he seip, pis ache and iuel is most greuou, for who pat hap [p]at yuel felip in his heed as it were betynge of hamoures and may not suffre noyse, nopir voys, nopir voys, nopir lizt, nopir schinyng. And yis yuel come of colerik smoke wip hoot winde and ventosite. perfore he felip in his heed picching and prickenge, brennyng and ring-ing." Seymour, *On the Properties*, vol. 1, 344.
32. Seymour, *Bartholomaeus*, 19.
33. M. Green, "Constantine the African," 145–146; Green, "Medical Books," 282–283.
34. Getz, *Medicine*, 38, 49; Long, "An Eleventh-Century WebMD"; Rawcliffe, *Medicine and Society*, 37.
35. The books were on themes as diverse as theology, geography, the nature of human life, and the natural world, while medical topics included the humors, anatomy, the life cycle, and treatments.
36. E. Wallis, *Medieval Medicine*, 249–250.
37. Woman's milk was, if not a common component, certainly a recognized ingredient in medical remedies. Bald's *Leechbook* used woman's milk in treatments for eyes and ears, and, for palsy, specified milk from a woman who had given birth to a male child. This seems to be a tradition that can be traced in Egyptian texts. See Buck, "Woman's Milk," 470–472.
38. E. Wallis, *Medieval Medicine*, 251.
39. Keen, *Journey of a Book*, 5; Seymour, *Bartholomaeus*, 12–15; E. Wallis, *Medieval Medicine*, 248.
40. "A Collection of Remedies," ff. 52v, 94r. For a transcription and translation, see Dawson, *Leechbook*, entries 605–607, 1042, 1063–1066.
41. Lev and Amar, *Practical Materia Medica*, 289–292.
42. Dawson, *Leechbook*, entry 607.
43. Original text: "My heid did yak yester nicht / This day to mak that I na nicht. / So sair the magryme dois me menyie / Perseing my brow as ony ganyie, / That scant I luik may on the licht." I am grateful to Dr. Jenni Nuttall for her permission to reproduce her translation of the text. For the full poem, see Nuttall, "On His Heid-Ake." See also Dunbar's "The Headache," in Conlee, *William Dunbar*.
44. Dunbar was from southeastern Scotland and attended St. Andrews University, where he trained as a cleric. From 1501 to 1513, he served at the court of King James IV of Scotland. He received an annual pension, and, while his precise role is not clear, historians have suggested that he may have served as a secretary or a chaplain, as well as a "makar," or court poet. See Conlee, *William Dunbar*.
45. Original text: "A maladyze yat takyth half a man is hed & doth him lesyn is sy3the of his yie." See Voigts, "Fifteenth-Century English Banns."
46. Voigts, "Fifteenth-Century English Banns," 264–265.
47. Bildhauer, "Medieval European Conceptions," S60–S64.

48. E. Wallis, *Medieval Medicine*, 281–282.
49. Original text: “Ppe vayne betwyx pe fyngers & pe thombs es gud to be opyd for het of warke in pe swldyrs & migram in pe heue [hede].” See Furnivall and Furnivall, *Anatomie of the Bodie*, 229–230.
50. Kamen, *All in My Head*, 73.
51. Voigts and McVaugh, *Latin Technical Phlebotomy*, 4–8.
52. Taavitsainen, “Transferring Classical Discourse,” 62.
53. Bildhauer, “Medieval European Conceptions,” S66.
54. E. Wallis, *Medieval Medicine*, 96.
55. Yearl, “Time of Bloodletting,” 55.
56. Bald’s *Leechbook*, 72, 149.
57. Clowes, *A Prooued Practise*, 176–179.
58. Paré, *Workes*, 692–693.
59. Gil-Sotres, “Derivation and Revulsion,” 122–132; Voigts and McVaugh, *Latin Technical Phlebotomy*, 8; Yearl, “Time of Bloodletting,” 26.
60. E. Wallis, *Medieval Medicine*, 285.
61. Mediolano, *Regimen Sanitatis Salerni*.
62. Gyer, *English Phlebotomy*, 218–219.
63. Bullein, *Neewe Booke*, f. xxii.
64. Guillemeau, *Frenche Chirurgerye*, f. 30.
65. E. Wallis, *Medieval Medicine*, 325.
66. Yearl, “Time of Bloodletting,” 53–64.
67. Curth, *English Almanacs*, 110.
68. Carlebach, *Palaces of Time*, 33.
69. See, for example, Anonymous [hereafter cited as Anon.], *Shepherds Kalendar*, unpaginated, images 63–65.
70. E. Wallis, *Medieval Medicine*, 287.
71. *Almanac in Latin and English*, f. 15r.
72. Monica Green makes this important point about the scarring, often deliberate, of medieval bodies. See M. Green, “Introduction,” 3, in *Cultural History*.

### Chapter 3 · “Take Housleeke, and Garden Wormes”

1. Corlyon, *Booke*, 11.
2. Corlyon, *Booke*, 12–13, 19–20.
3. Corlyon, *Booke*, 4–10, 11–16.
4. The recipes have been gathered by systematically researching the Wellcome Library’s collection of recipe books, both archival and digitized, and searching EEBO for remedies with keywords such as megrim, meagrim, meagrom, mygryme, and hemicrania.
5. See “For Pluerese When a Man Is Past Blut Leting,” Anne Brumwich and others, collection of receipts, 73; “An Aproved Medecine for a Pluresie, if They Cannot Have ye Helpe of Letinge Blood,” Sir Thomas Osborne, recipe book; “An Approved Medicine for a Pleurisy if They Cant Have ye Help of Letting Blood,” Bridget Hyde, recipe book; “How to Let on Blood yt Hath a Plague Sore,” Jane Parker, recipe book. On the overlap between surgical and domestic medical remits, see LeJacq, “Medical Recipes.”
6. Comparing the handwriting in this book with a letter Alatheia wrote to her mother in 1607—about the “strange operation” of the “physicke” she had taken that “distempered me exceedingly for some dayes after”—shows without doubt that the book was written in Alatheia’s hand. Alatheia Talbot letter to the Countess of Shrewsbury, f. 135.
7. Field, “Many Hands Hands,” 53.

8. Mrs. Corlyon's *Booke* has gained the attention of historians, whose interests range from her remedies for pimples to those for curdled milk in the breast. See various contributions to The Recipes Project.

9. The Wellcome Library in London contains more than 270 volumes of manuscript recipe books dating from the sixteenth to the nineteenth centuries, many of which can be searched for online and viewed in high-quality reproductions. The Folger Shakespeare Library in Washington, DC, contains around a hundred, and there are many others in local archives and medical libraries.

10. Leong, "Making Medicines."

11. Studies of recipe books include DiMeo and Pennell, *Reading and Writing*; Osborn, "Role of Domestic Knowledge"; L. Smith, "Women's Health Care."

12. Leong, "Collecting Knowledge," 83–84; Rankin, *Panacea's Daughters*, 8–17.

13. Eamon, "How to Read," 41; Evans, "Gentle Purges," 2–19; L. Smith, "Imagining Women's Fertility," 69–79.

14. Elyot, *Castel of Helth*, 52.

15. Corlyon's *Booke*, 37, 99.

16. Fissell, "Marketplace of Print," 114; Leong, "'Herbals She Peruseth,'" 559–562; Slack, "Mirrors of Health," 246–247.

17. Boorde, *Breuiary of Helthe*. Andrew Boorde began his career as a monk before leaving the church to study medicine on the continent. He compiled the *Breuiary* after many years of traveling around Europe, and it became very successful, being reprinted in at least five more editions between 1552 and 1598. See Furdell, "Boorde, Andrew."

18. Boorde, *Breuiary*, ff. ii–iii; Slack, "Mirrors of Health," 256–260.

19. Boorde, *Breuiary*, f. lxxiii.

20. Boorde, *Breuiary*, f. lxxiii.

21. Barrrough, *Methode of Phisicke*, 1.

22. Barrrough, *Methode of Phisicke*, 2.

23. Barrrough, *Methode of Phisicke*, 13–14.

24. Paré, *Workes*, 640.

25. Croke, *Mikrokosmographia*, 122.

26. Boorde, *Breuiary*, f. lxxiii.

27. Barrrough, *Methode of Phisicke*, 2–3.

28. Collins, *Choice and Rare Experiments*, 5, 7; Partridge, *Widowes Treasure*, unpaginated [image 10].

29. "For ye megrom." Miss Shaw, Collection, 248.

30. Slack, "Mirrors of Health," 327.

31. Moulton, *This Is the Myroure*, lxxxviii.

32. Cartwright, *Hospitall*, 56.

33. Anon., *Admirable Vertue*.

34. Copland, *A Boke*, unpaginated.

35. Cogan, *Hauen of Health*, 81.

36. Gerard, *Herball*, 758–759.

37. Anon., *Here Begynneth*, f. xi.

38. "A Collection of Remedies," f. 52v.

39. Vicary, *English Man's Treasure*, 175.

40. "Ye Toothach Megrim and Head Ach," Townshend Family collection, 19.

41. Migraine Trust, "Feverfew." In the 1980s, in a study of seventeen patients, some researchers found evidence that eating fresh feverfew leaves daily had a preventive effect. See E. Johnson et al., "Efficacy of Feverfew," 569–573; Volger et al., "Feverfew."

42. Culpeper, *English Physitian Enlarged*, 98; Pechey, *Compleat Herbal*, 91. My thanks to Sally Foxhall for finding this example.
43. Anon., *Here Begynneth*, f. xi; Langham, *Garden of Health*, 39–42.
44. Leong, “Just Who”; St. John, *Her Booke*, 32, 54.
45. Corlyon, *Booke*, 32.
46. “For the Migrime in the Forehead,” J. Jackson, recipe book, f. 37; “For the Megrim Convulsions Fitts or Falling Sicknesse,” St. John, recipe book, f. 78; “For ye Megrim or Giddiness of ye Head,” Lady Ayscough recipe book, f. 125.
47. Pughe, *Physicians of Myddvai*, 339.
48. Dawson, *Leechbook*, recipe nos. 41, 263, 496, 498, 502, 761, 852, 1021, 1024. For the migraine recipe, see no. 606. The transcription cites “stonescar,” which is an error.
49. Corlyon, *Booke*, 115.
50. Corlyon, *Booke*, 9, 47, 76.
51. Culpeper, *Pharmacopeia Londinensis*, 31–32. Brockbank, “Sovereign Remedies,” 4, 6.
52. Pope John XXI, *Treasury of Healthe*, unpaginated [image 54].
53. Collins, *Choice and Rare Experiments*, 6.
54. Sleight and Whitfeld, collection of medical receipts, 77.
55. Anon., *Closet*, 160.
56. Some historians have suggested that Alatheia Talbot, the owner of Mrs. Corlyon’s *Booke*, was the probable author of this anonymously (and posthumously) published book, with a preface to the reader signed “Philiatros,” the frontispiece of which bears a portrait of the countess. This association is by no means certain, however, and certainly *Natura Exenterata* bears little direct resemblance to the recipes in Mrs. Corlyon’s *Booke*. See Philiatros, *Natura Exenterata*, 28; Travitsky and Prescott, *Seventeenth-Century English Recipe Books*, xxxv.
57. Slack, “Mirrors of Health,” 261.
58. Corlyon, *Booke*, 5.
59. Gerard, *Herball*, 637.
60. Demaitre, *Medieval Medicine*, 123.
61. Boorde, *Breuiary*, f. 29r.
62. Barrough, *Methode of Phisicke*, 14.
63. J. Jackson, recipe book, ff. 4 and 17, 16, 27.
64. J. Jackson, recipe book, f. 41v, 52.
65. J. Jackson, recipe book, f. 95, 101.

#### Chapter 4 • A “Deadly Tormenting Megrym”

1. A. Smith, *Servant of the Cecils*, 54–67.
2. Francis Thomson to Mr. Hicks.
3. Blount, *Glossographia*, unpaginated.
4. Walsham, “Holywell,” 212; Walsham, *Reformation of the Landscape*, 395.
5. W. Thomson, *Spas That Heal*, 81–82.
6. M. Langham and Wells, *History of the Baths*, 9–13, 15.
7. William Bassett letter to Cromwell, 1538, in T. Wright, *Three Chapters*, 143–144.
8. Hembry, *English Spa*, 22.
9. Jones, *Benefit*, f. 2v.
10. Speed, *Theatre of the Empire*, 67.
11. W. Thomson, *Spas That Heal*, 82.
12. Langham and Wells, *History of the Baths*, 22.
13. Jones, *Benefit*, f. 2r.
14. Langham and Wells, *History of the Baths*, 20.



15. Hembry, *English Spa*, 24.
16. Walsham, *Reformation of the Landscape*, 413.
17. By the 1580s, recusants could be tried at Quarter Sessions and fined up to £20 per month for missing an Anglican service. See Richardson, “Topcliffe, Richard.”
18. Jones, *Benefit*, ff. 4–6, 21.
19. Hembry, *English Spa*, 14.
20. W. Thomson, *Spas That Heal*, 16; Walsham, *Reformation of the Landscape*, 406, 408.
21. Deane, *Spadacrene Anglica*, 17.
22. Deane, *Spadacrene Anglica*, 13–15.
23. Kassell, *Medicine and Magic*, 6–8.
24. The Casebooks Project is an ongoing effort to provide an online digital edition of the entire collection of Foreman’s and Napier’s medical records. At the time of this writing, searching the project’s website for the keyword migraine reveals eighteen cases of megrym or megrim, all from Napier’s practice, one of whom was seen by his assistant, Gerence James.
25. Kassell, “Casebooks,” 609; MacDonald, *Mystical Bedlam*, 26, 30.
26. MacDonald, *Mystical Bedlam*, 28.
27. Kassell, “Casebooks,” 606; MacDonald, *Mystical Bedlam*, 26.
28. Casebooks Project, case 39010, accessed 28 January 2018 [as were all other cases from this website mentioned in the notes]; Casebooks Project, case 17104.
29. Casebooks Project, case 13499.
30. Casebooks Project, case 14625.
31. Casebooks Project, case 22924; email correspondence with Lauren Kassell, 29 January 2018.
32. Casebooks Project, case 15476.
33. My thanks to Lauren Kassell for her assistance with transcribing and interpreting these cases and for explaining jeralog.
34. “A Collection of Remedies,” f. 94r, 136.
35. Casebooks Project, case 11809.
36. Casebooks Project, case 10738.
37. Casebooks Project, case 11613.
38. Anon., *Great and Wonderful Prophecies*, 3.
39. Fissell, “Marketplace of Print,” 110.
40. Withey, “Persons That Live Remote,” 242.
41. Barrough, *Method of Phisicke*, 1.
42. Apothecary’s cash-book, ff. 13r, 27r, 33v, 36v.
43. Williams, *Read All about It!*, 5.
44. Salmon, *Phylaxa Medicina*, 88–89.
45. See, for example, “Advertisements,” *Post Boy* (London), 20–23 December 1701, BCN.
46. “The True Cephalick or Head Snuff,” *Daily Courant* (London), 29 January 1705, BCN.
47. “The Most Noble Volatile Smelling Bottle,” *Daily Courant* (London), 20 February 1708, BCN.
48. P. Wallis, “Consumption, Retailing, and Medicine,” 30–31.
49. Addison, “Royal Exchange.”
50. “The True Royal Snuff for Purging the Head,” *The Spectator* (London), Friday, 23 May 1712, BCN.
51. “Advertisements,” *Post Boy* (London), 30 June–2 July 1713, BCN.
52. Cave, “The Head-Ache,” 249. I’m grateful to Ludmilla Jordanova for introducing me to this poem.
53. Cody, “No Cure, No Money,” 103.
54. Porter, *Health for Sale*, 25.

55. Kamen, *All in My Head*, 114–115.
56. Kamen, *All in My Head*, 178.
57. Berkeley, *Siris*, 4–35; Breuninger, “Panacea for the Nation.”
58. Prior, *Authentic Narrative*. On the opposition to Berkeley, see Benjamin “Medicine, Morality,” 180.
59. Prior, *Authentic Narrative*, case 96: 26–27, case 142: 39, case 273: 64–65.
60. J. Kelly, “Drinking the Waters,” 133–135.
61. Barrington, *Personal Sketches*, 125–132.
62. Anon., *Report of the Cases*, 14.
63. Anon., *Report of the Cases*, case 68: 38.
64. Anon., *Report of the Cases*, case 120: 61.
65. Anon., *Report of the Cases*, case 77: 42, case 82: 44–45.
66. Barker, “Medical Advertising and Trust,” 391; Shaw, *Miracles in Enlightenment England*, 75.
67. Cody, “No Cure, No Money,” 109; Porter, *Health for Sale*, 52.
68. Dr. William Cullen to Dr. John Alves, regarding Mrs. Baillie, 21 April 1777, letter ID 4045, The Cullen Project.
69. Dr. John Alves to Dr. William Cullen, regarding Mrs. Baillie, 16 April 1777, letter ID 1396, The Cullen Project; Dr. John Alves to Dr. William Cullen, regarding Mrs. Baillie, 3 May 1777, letter ID 1400, The Cullen Project.
70. Bacon, *Sylva Sylvarum*, 187–188.
71. Lardreau, “A Curiosity,” 33.
72. Adams, *Diseases of the Soule*, 3–5; Mornay, *Discourse*, C4.
73. Original French text: “Migraine est proprement quand la douleur ne tient que la moitié de la teste [tête], dextre ou senestre.” See Paré, *The Workes*, 410.
74. Brooke, “The Imposter,” 81.
75. Lardreau, “A Curiosity,” 35.
76. Lardreau, *La migraine*, 36–37.
77. Thomas Curtis, letter to Charles Blagden.
78. One contemporary travel guide described “a well that ebbs and flows as the sea does” at Newton. A later guidebook was not complimentary: “There is no inn at this place . . . but at a distance below the village one solitary building of public resort, Newton bathing house, rears its diminutive form to view in the midst of an arid desert.” See Donovan, *Descriptive Excursions*, vol. 2, 372–373; Paterson, *Paterson’s British Itinerary*, 207.
79. Charles Blagden, letter to Thomas Curtis.
80. Mead, *Treatise*, 84–86.
81. Liveing, *On Megrim*, 447.
82. Mead, *Treatise*, 84–86, 88.
83. Harrison, “From Medical Astrology,” 31–32.
84. Tissot, *Traité des nerfs*, 90–92.
85. Liveing, *On Megrim*, 256.
86. Cheyne, *English Malady*, 52–55.
87. Cullen grouped diseases, according to their characteristic symptoms, into classes, orders, genera, and species, in the same way as botanical natural history. Cullen’s relatively simple system identified just four classes in his symptom-based nosology: pyrexiae were characterized by fever; second came neuroses; then cachexia, or wasting diseases; and, finally, locales, an “unsatisfactory rag-bag of disorders.” See W. Bynum, “Cullen and the Study,” 137–188; Cullen, *Nosology*, 97–135.
88. Fothergill, “Remarks,” 103–104, 108, 112–114.
89. “King’s Theatre Masquerade,” *Gazette and New Daily Advertiser* (London), 6 May 1782, 3, BCN.

90. Andrews, *Comparative View of the French and English Nations*, 72, cited in M. Cohen, *Fashioning Masculinity*, 9.
91. Castle, “Eros and Liberty,” 156–176.
92. Lardreau-Cotelle, “Migraine.”
93. “Parisian Intelligence,” *General Evening Post* (London), issue 8383, 16–18 August 1787, 4, BCN.
94. Frederica, Duchess of York, letter to Sir Henry Halford.

### Chapter 5 • “The Pain Was Very Much Relieved and She Slept”

1. J. H. Jackson, “Case of Elizabeth B.,” April 1895, 18. In accordance with the Queen Square Archives’ policy to ensure patient anonymity, and following advice from the archivist, I refer to patients of the National Hospital only by their first name in the text, with a first name and initial of the surname in the endnotes.
2. Contemporaneous advice for employers and servants includes Anon., *Servants’ Guide*; B. Smith, *Sunshine in the Kitchen*. My thanks to Lauren Butler, Mary-Anne Boermans, Carly Silver, and Judith Flanders for a discussion of this point via Twitter.
3. J. H. Jackson, “Case of Elizabeth B.,” April 1895.
4. Liveing, *On Megrin*, 44–45, 226.
5. Trotter, *View of the Nervous Temperament*, xi, xvii, 72, 169, 186–191.
6. Mease, *Treatise on the Causes*, 5.
7. Anon. “Medical Society of London,” 57–58.
8. C. Parry, *Elements*, 244–245.
9. Labarraque, “Essai,” 39, 65–66. On the influence of Labarraque, see Eadie, *Headache*, 183; Liveing, *On Megrin*, 256.
10. Hall, “On the Threatenings of Apoplexy,” cited in Liveing, *On Megrin*, 117.
11. Murphy, “On Headache” (18 February), 182. During the early 1830s, “Dr. G.” had been widely quoted in British and American medical journals for enthusiastically recommending the use of leeches to let blood from “robust and plethoric young women” with headaches, while recommending cold compresses to the forehead, dry cupping, spirits of turpentine, and nitrate of silver for “hysterical” women with a more delicate constitution. See, for example, Anon., “Dr. Graves,” 145–148.
12. Murphy, “On Headache” (18 February), 183.
13. Buchan, *Domestic Medicine*, 352–354; Murphy, “On Headache” (25 February), 209.
14. Murphy, “On Headache” (20 May): 540–541.
15. In the late seventeenth century, Thomas Willis and Thomas Sydenham (in a letter addressed to Dr. William Cole, published in *Dissertatio epistolaris* [Epistolary Dissertation], in 1682) had rejected the idea that a woman’s womb could actually “wander” around her body and, between them, located hysteria’s causes in the brain and nervous system. Sydenham saw this as a disorder of the “animal spirits,” and he came to believe that both men and women could equally suffer from hysteria, or hypochondriasis. On this history, see Micale, *Hysterical Men*, 19–21, 49, 59–61.
16. Turner, “Disability and Crime,” 55.
17. George Phillips, “Breaking Peace: Wounding,” 11 January 1865, reference t18650111-186, POB.
18. Jane Milburn, “Theft: Stealing from Master,” 12 May 1845, reference t18450512-1153, POB.
19. Turner, “Disability and Crime,” 56.
20. Ann Noakes, “Killing: Murder,” 26 April 1880, reference t18800426-428, POB.
21. Lees, “Tetrachloride,” 810; Bristowe, “Cavendish Lecture on Hysteria.”
22. Ross, *Treatise*, 689–690, cited in Kempner, *Not Tonight*, 33.
23. Ross, *Treatise*, 694.

24. Kempner, *Not Tonight*, 33.
25. Although Thomas Willis had coined the English term “neurologie” in the later translation of his 1664 work in Latin, *Cerebri Anatome*, it was only in the 1830s that the modern term “neurologist” emerged to denote a nerve specialist. See Willis, *An Essay*, 5. On the history of the terminology, see Casper, *The Neurologists*, 11; Oppenheim, *Shattered Nerves*, 16.
26. W. Bynum, “The Nervous Patient,” 90.
27. Oppenheim, *Shattered Nerves*, 27.
28. W. Bynum, “The Nervous Patient,” 96.
29. Booth, *Cannabis*, 38, 57; Clendinning, “Observations.”
30. Clouston, “Observations and Experiments.”
31. Anstie, *Neuralgia*, 190–191.
32. Sussex County Lunatic Asylum, *Thirteenth Annual Report*, appendix B.
33. By 1873, these appendices came to fifty-seven pages, double the length of the annual reports themselves. At this point, the Medico-Psychological Association agreed that a section of the *Journal of Mental Science*, a “much more appropriate and convenient vehicle,” could be set aside for such reports. See Sussex County Lunatic Asylum, *Fifteenth Annual Report*, 25–26.
34. Greene, “Treatment of Migraine,” 35–38.
35. See, for example, Anon., “Report on the Treatment” (21 December), 683; Leconte, “Guarana,” 313; Samelson, “Guarana against Sick-Headache,” 498.
36. Aminoff, *Brown-Sequard*, 103.
37. Scott et al., *William Richard Gowers*, 84–87.
38. J. H. Jackson, “Case of Elizabeth B.,” April 1895.
39. J. H. Jackson, “Case Illustrating the Relation,” 244–245.
40. J. H. Jackson, “Case Notes, Female,” 1895.
41. Gowers and Jackson, “George F.,” July 1877, 67.
42. Gowers and Jackson, “Susan T.,” April 1873, 243–244.
43. J. H. Jackson, “Case of Hemiopia,” 306–307.
44. Bury, “Chronic Illness,” 173–174.
45. Ferrier, “Mary Ann W.,” October 1896.
46. Beevor, “Janet W.,” February 1899.
47. J. H. Jackson, “Emma Jane C.,” July 1892.
48. Gowers, “Augustus A.,” September 1898.
49. Cornwell, *Hard-Earned Lives*, 130–131.
50. Bastian, “George R.,” October 1891.
51. Buzzard, “Jane H.,” May 1881.
52. Entract, “‘Chlorodyne’ Browne.”
53. Earles, “Introduction of Hydrocyanic Acid,” 305–312.
54. Anon., “Report on the Treatment” (21 December), 683.
55. Gowers, “Annie W.,” March 1899.
56. This would be included in the first seven editions of Lord Russell Brain’s *Diseases of the Nervous System*, from 1933 until 1969. As late as the 1970s, a recipe for Gowers’ Mixture was being published in migraine texts. See Clarke, “Gowers’ Mixture,” 215–216; Foster, “General Aspects of Management,” 140; Scott et al., *William Richard Gowers*, 226.
57. Potter, *Handbook of Materia Medica*, 684–685.
58. Chemist and Druggist, *Pharmaceutical Formulas*, 125.

### Chapter 6 • “As Sharp as If Drawn with Compasses”

1. Gowers, “Subjective Visual Sensations,” 21–22, 33–35.
2. Gowers, “Subjective Visual Sensations,” 25, 37–38.
3. Anon., “Subjective Visual Sensations,” 563.

4. Daston and Galison, *Objectivity*, 17–27.
5. This modern idea of scientific objectivity, the virtue of “seeing” or “knowing” scientifically without prejudice, interference, interpretation, or intelligence, in order to prevent the scientist’s subjectivity from intruding, is why, although many modern headache specialists enter the field because they have migraine themselves, they rarely write about their personal experiences. See Kempner, *Not Tonight*, xiv.
6. Tissot, *Traité des nerfs*, 112–113.
7. Fothergill, “Remarks,” 120–121.
8. Heberden, *Commentaries on the History*, 78.
9. C. Parry, *Collections*, vol. 1, 558.
10. Andral, “Lectures on Medical Pathology,” 2.
11. Snyder, *Philosophical Breakfast Club*, 301, 335.
12. Herschel, “On Sensorial Vision,” 401–406.
13. Herschel, “On Sensorial Vision,” 406–409. In 1852, Herschel and Airy had corresponded on the topic of some optical phenomena seen by the sister of Herschel’s assayer. It is likely that this is the woman to whom Herschel was referring. See Musselman, *Nervous Conditions*, 129.
14. Herschel, “On Sensorial Vision,” 411–413.
15. Herschel, diary, 11 June 1846.
16. Herschel, diary, 19 February 1854 and 18 August 1855.
17. Herschel, diary, 12 February 1865 and 30 July 1866.
18. Wollaston, “On Semi-Decussation,” 222–231.
19. Musselman, *Nervous Conditions*, 117.
20. Brewster, “On Hemiopsy,” 503–507. In 1790, William Rowley described hemiopsia as “a defect of vision in which the patient sees the half, but not the whole, of an object.” See Rowley, *Treatise*, 328.
21. G. Airy, “Astronomer Royal on Hemiopsy,” 19–21.
22. Buchan, *Domestic Medicine*, 54–57.
23. Madden, *Infirmities of Genius*, 78–79.
24. Brewster, “On Hemiopsy,” 506.
25. G. Airy, “Astronomer Royal on Hemiopsy,” 21.
26. W. Airy, *Autobiography*, 12.
27. Herschel, diary, 5 May 1868.
28. H. Airy, “On a Distinct Form,” 252–253.
29. H. Airy, “On a Distinct Form,” 247.
30. H. Airy, “On a Distinct Form,” 247–248.
31. H. Airy, “On a Distinct Form,” 256, 258.
32. H. Airy, “On a Distinct Form,” 264.
33. Daston and Galison, *Objectivity*, 130–131.
34. Lithography, invented in 1798, did away with the need to etch or grind a plate. Images could be drawn directly onto the polished printing stone with waxy crayons, pencils, or pens, or transferred from paper. Lithography ensured that precise texts and lines could be reproduced and lent itself to the large areas of black that were so characteristic of astronomical images and Airy’s diagrams. In 1837, Godefroy Engelmann patented the color technique of chromolithography, the first true method for printing multiple colors (rather than tinting by hand). By the 1860s, chromolithography was widely used for mass-producing posters, advertisements, and book illustrations.
35. Liveing, *On Megrin*, 81.
36. Liveing, *On Megrin*, 1–2.
37. Symonds, “On Headache,” 419–420.
38. Liveing, *On Megrin*, 4.

39. Liveing, *On Megrim*, 336.
40. Liveing, *On Megrim*, 390–391.
41. Liveing, *On Megrim*, 49.
42. Liveing, *On Megrim*, 107, 113.
43. Liveing, *On Megrim*, 25, 430–436.
44. Levy, *A Brain Wider*, 38–39.
45. Liveing, *On Megrim*, 29.
46. Latham, *On Nervous or Sick-Headache*; Latham, “On Sick-Headache,” 7–8.
47. Latham, *On Nervous or Sick-Headache*, 16–23.
48. For a fuller discussion of Liveing and Latham, their influence, and the modern reputation of their work, see Weatherall, “Migraine Theories.”
49. Alexander Auld was not convinced, and he proposed that “not a few cases of so-called developmental migraine, supposed to be epileptic manifestations, may with greater truth be referred to hysteria.” Auld, *Asthma*, 106–107.
50. J. H. Jackson, “A Case of Hemiopia,” 306–307.
51. John Hughlings Jackson’s understanding of Thomas R.’s symptoms reflected a belief common among neurologists in Europe and America: the presence of pain must indicate the existence of a lesion, whether or not contemporary techniques could find it. This was an important change in understanding disease, differing from the humoral framework, which had emphasized imbalances and their ability to move around the whole bodily system, rather than identifying precise locations for and agents of disease in tissue. See Goldberg, “Pain without Lesion.”
52. Allbutt, “Clinical Lecture,” 205–206.
53. Liveing, *On Megrim*, 399, 404.
54. Haig, *Uric Acid*, ix.
55. Haig, *Uric Acid*, 222–226, 231.
56. Haig, *Uric Acid*, 238–239.
57. The term “neurasthenia” came from Scottish physician John Brown’s eighteenth-century grouping of diseases into two categories: “sthenic” diseases, which were characterized by too much excitability, and “asthenic,” by too little. On Brown’s terminology, see Oppenheim, *Shattered Nerves*, 94–95. The most comprehensive study of neurasthenia is Schuster, “Neurasthenic Nation.”
58. Sengoopta, “Mob of Incoherent Symptoms,” 97–99.
59. Beard, *Practical Treatise*, 13.
60. Beard, *Practical Treatise*, 24–25.
61. Beard, *Practical Treatise*, 148–149.
62. Beard, *Practical Treatise*, 103.
63. Liveing, *On Megrim*, 434.
64. Sengoopta, “Mob of Incoherent Symptoms,” 98.
65. Crichton-Browne, “An Oration,” 1017.
66. Bolton Tomson, “Vaso-motor Neuroses,” 877–879.
67. Wilks, “Epilepsy and Migraine,” 263.
68. Stone, “Samuel Wilks,” 263–265.
69. Allan, “Inheritance of Migraine,” 590.
70. Rachford, *Neurotic Disorders of Childhood*, 192–193.
71. Maudsley, *Pathology of Mind*, 108–111.
72. Crichton-Browne, “Circles of Mental Disorder,” 262–267, 265.
73. Liveing, *On Megrim*, 27, 430–431.
74. Beard, *Practical Treatise*, 164.
75. Liveing, *On Megrim*, 22, 86, 252.
76. Wilkinson and Isler, “The Pioneer Woman’s”; Anon., “Report on the Treatment” (13 January), 46.

77. Anon., “Report on the Treatment” (21 December), 683; Latham, “Guarana (Paullinia Powder),” 446–447.
78. Rachford, *Neurotic Disorders of Childhood*, 193–194.
79. Eadie, *Headache*, 99–100.
80. Gowers, *Manual of Diseases*, 776–794.
81. Gowers, *Manual of Diseases*, 793–795.
82. Gowers, *Manual of Diseases*, 778–791.
83. Gowers, *Border-Land*, 100–103.
84. Eadie, “Hubert Airy,” 263–267.
85. Levene, “Sir G. B. Airy,” 15–23.
86. For a good example of how aura has fascinated neurologists, see Oliver Sacks’s essay on “Patterns” in *Hallucinations*, 122–132.
87. Weatherall, “Migraine Theories,” 8.
88. Gowers, *Manual of Diseases*, 777.

### Chapter 7 • “A Shower of Phosphenes”

1. Singer, *From Magic to Science*, 8.
2. At the turn of the twentieth century, Hildegard’s works, including the Wiesbaden copy of the *Scivias* manuscript (c. 1165), had begun to attract a great deal of attention, particularly from feminist medical historians, who enthusiastically adopted Hildegard as a model of female medical practice, the experimental method, and natural observation. See M. Green, “In Search,” 39, 44–45.
3. Singer, *From Magic to Science*, viii.
4. Singer, “Scientific Views,” 51–55.
5. Lorch, “Language and Memory Disorder.”
6. Cooter, “The Life of a Disease?,” 111. See also McGough, “Syphilis in History,” 573–574.
7. C. Bynum, *Holy Feast*, 194–218. See also Brumberg, *Fasting Girls*.
8. Shuttleworth, *Mind of the Child*, 22.
9. Rose, “Overview from Neolithic Times,” 347–352.
10. Rocca, “Galen,” 253–271.
11. Ganidagli et al., “Approach to Painful Disorders,” 167.
12. Rapoport and Edmeads, “Migraine,” 1221; Willis, *London Practice of Physick*, 380.
13. Rose, “Overview from Neolithic Times,” 357; Eadie, *Headache*, 35.
14. Brunton, “Discussion on Headaches,” 1241–1243.
15. Brunton, *Hallucinations*, 25–26.
16. Brunton, *Hallucinations*, 27–28.
17. Clower and Finger, “Discovering Trepanation,” 1423.
18. Levy, *A Brain Wider*, 25.
19. Osler, *Evolution of Modern Medicine*, 8.
20. T. Parry, “Neolithic Man.”
21. For overviews of Hildegard’s life and work, see Dronke, “Hildegard of Bingen”; Flanagan, *Hildegard of Bingen*; Newman, *Voice of the Living Light*.
22. Arnold Klebs, letter to Charles Singer, 29 July 1913.
23. Anon., “St. Hildegard,” 1–2.
24. Fee and Brown, “Using Medical History,” 149.
25. Singer, *From Magic to Science*, ix.
26. Singer quoted extensively from Theodoric’s *vita* of the life of Hildegard, which had been reprinted in Migne, *S. Hildegardis Abbatissa*. See Singer, “Scientific Views,” 52–53.
27. Singer, “Science,” 111.
28. Singer, “Scientific Views,” 30–32.

29. Mayer, "When Things Don't Talk," 326–327.
30. Singer, *From Magic to Science*, xii–xiii.
31. Elliott, "Migraine and Mysticism," 449–459.
32. Sacks, *Migraine*, 106–108. Oliver Sacks's book, first published in 1970 and designed for a general readership, quickly became a best seller. Through many editions, as well as being revised and expanded in 1985 and again in 1990, it has attracted millions of readers since its first publication.
33. Sacks, *Migraine* (1985), 55.
34. Sacks, *Migraine* (1985), 192.
35. Sacks, *Migraine* (1992), xv.
36. Silvas, *Jutta and Hildegard*, 226.
37. On Hildegard and medicine, see Glaze, "Medical Writer"; M. Green, "In Search," 51; Sweet, *Rooted in the Earth*.
38. Baird and Ehrman, *Letters of Hildegard*, 80–82; E. Cohen, *Modulated Scream*, 118.
39. Newman, "Hildegard of Bingen," 167.
40. Flanagan, *Hildegard of Bingen*, 200.
41. Newman, "Three-Part Invention," 197–198.
42. Madeline Caviness points to stylistic conventions, such as the depiction of drapery, the privileging of the feminine in several of the illuminations, and the close correlation between text and imagery, as well as the transposition of ideas from Hildegard's other writings, as evidence for the abbess's direct role in creating the images. This argument is explored most fully in Caviness, *Art*, 71–108; Caviness, "Hildegard as Designer."
43. Caviness, "Artist," 110, 113.
44. Charles Singer's own wording on this point changed subtly over time. While, in his original Hildegard article (1917), he claimed there was "strong evidence" that the manuscript was either supervised by Hildegard herself or "under her immediate tradition," in his revised article (1928), this phrase became "little doubt." In the 1928 version, Singer also removed the highly criticized sections from the original article, in which he rejected Hildegard's authorship of the medical manuscript *Causes and Cures*. While not integral to his discussion about migraine, which refers only to *Scivias*, Singer's deletion of the part about *Causae et Curae* further removed any sense of doubt in the piece, allowing historians who have only consulted the 1928 version of his article or the essay on "The Visions of Hildegard of Bingen" in his 1958 book (*From Magic to Science*), to forget that debates about manuscript authenticity were as contested in Singer's time as they are today.
45. "Hildegard of Bingen (Migraine)," Mombu, 6 April 2010, <http://www.mombu.com/medicine/medicine/t-hildegard-of-bingen-migraine-4798218.html>.
46. Willis, *Two Discourses*, 106, 121–122.
47. Owen, "Famous Case," 571.
48. See, for example, Skwire, "Women, Writers, Sufferers"; Zimmer, *Soul Made Flesh*, 190–199. For an excellent deconstruction of Willis's neurological reputation, see O'Neal, "A Love of 'Words as Words,'" 7–13.
49. Eadie, *Headache*, 6–8, 60–68; Willis, *Two Discourses*, 107. On Willis and heredity, see Liveing, *On Megrim*, 28.
50. Willis, *De Anima Brutorum*, 291; Willis, *Two Discourses*, 106.
51. Eadie, *Headache*, 107–108; Pearce, "Historical Aspects," 1099.
52. Willis, *Two Discourses*, 122.
53. Newman, "Sibyl of the Rhine," 1.
54. Levy, *A Brain Wider*, 122.
55. Ferrari and Haan, "Migraine Aura," 686.
56. Haan and Ferrari, "Picasso's Migraine."



57. Blau, “Somesthetic Aura,” 582.
58. Podoll and Robinson, “Lewis Carroll’s Migraine Experiences,” 1366. William Bowman could not have connected Carroll’s visions to migraine, because the link between aura and migraine was not commonly made for another two decades, as chapter 6 discusses.
59. Levy, *A Brain Wider*, 97–106, 115.
60. Sharratt, “Were Hildegard’s Visions.”
61. Aikin, “Etiology,” 485–487.
62. Elliott, “Migraine and Mysticism,” 452.
63. Critchley, “Discarded Theories,” 241–246.
64. Hurst, “Migraine and Its Treatment,” 60–61. Luminal had been discovered in 1912, having been developed first as a sedative for the mentally ill, and then administered for epilepsy at the Leipzig Institute for Brain Research. By the 1920s, it was being widely recommended as a treatment for migraine.
65. Symonds, “Discussion on Migraine,” 1097–1106.
66. Symonds, “Discussion on Migraine,” 1106–1107.
67. Symonds, “Discussion on Migraine,” 1108–1110.
68. This situation echoes historian Mathew Thomson’s observations about neurasthenia as a way of dumping together “a vast range of conditions which had no other obvious organic origin.” Indeed, William Gowers saw neurasthenia as a “convenient” term “for when the patient suffers from so many slight functional disorders that it is difficult to select any one as sufficiently prominent to afford a designation.” Gowers urged physicians to resist the “craving for nomenclature,” because giving a firm diagnosis in such situations “would involve more error than truth.” See Gowers, *Manual of Diseases*, 960; M. Thomson, “Neurasthenia in Britain,” 79–80.
69. Atkinson, “Nasal Headaches,” 264–266.
70. Lorch, “Language and Memory,” 3136.
71. Historian Sally Shuttleworth has observed that medical writers have often used clinical legends anachronistically and unproblematically, for their own ends. Once transformed into cases by scientific authority, such historical stories take on textual lives of their own as they are repeated over decades. See Shuttleworth, *Mind of the Child*, 22.
72. Rebecca O’Neal has noted the neurological community’s “highly selective and teleological” embrace of Willis as a forefather. See O’Neal, “A Love of ‘Words as Words,’” 7–8.

### Chapter 8 • “Happy Hunting Ground”

1. Goltman, “Mechanism of Migraine,” 352–353.
2. For more discussion of the intellectual climate that fostered the emergence of neurosurgery, see Pressman, *Last Resort*, 47–58.
3. Bliss, *Harvey Cushing*, 169–173; Gavrus, “Making Bad Boys Good,” 73–78.
4. Raz, *Lobotomy Letters*, 1–5. The classic study examining the circumstances in which invasive treatments such as lobotomy can be developed and accepted is Pressman, *Last Resort*.
5. Critchley and Ferguson, “Migraine” (21 January 1933), 123.
6. Brain, *Diseases*, 735.
7. Graham, *Treatment of Migraine*, 5–8.
8. Osler, *Principles and Practice*, 957–958.
9. Aikin, “Etiology and Treatment,” 486.
10. Clemens von Pirquet’s term initially was dismissed in favor of Charles Richet’s word “anaphylaxis” (first coined in 1902 in two papers by Paul Portier and Richet, with Richet’s continued research leading to a Nobel Prize in 1913), but by the 1930s, anaphylaxis was increasingly being used to describe extreme reactions, while the concept of allergy brought together a broader host of problems, including asthma triggered by the presence of animals, the seasonal nature of hay fever and the discovery of pollen as a causative agent, and the isolation of histamine. For

the history of this terminology and the early history of allergy, see M. Jackson, *Allergy*, 31–38; M. Smith, *Another Person's Poison*, 43–66.

11. Löwy, "Biotherapies of Chronic Disease," 681; Urbach and Gottlieb, *Allergy*, 795; Vaughan, "Allergic Migraine," 1383–1386.
12. Bray, *Recent Advances in Allergy*, 333–335.
13. Vaughan, *Allergy and Applied Immunology*, 321.
14. M. Smith, *Another Person's Poison*, 91–92.
15. Schwartz, "Is Migraine an Allergic Disease?," 428.
16. Walker, "Place of Allergy," 24.
17. Critchley, "Migraine: General Remarks," 165.
18. For this early history of hormones, see Sengoopta, *Most Secret Quintessence*, 1–2.
19. Pardee, "Pituitary Headaches," 174–184.
20. Bramwell, "Discussion on Migraine," 768; Sengoopta, *Most Secret Quintessence*, 4.
21. Moffat, "Treatment of Menstrual Migraine," 614.
22. Glass et al., "Migraine and Ovarian Deficiency," 333–338.
23. Sengoopta, *Most Secret Quintessence*, 156–163.
24. Critchley and Ferguson, "Migraine" (21 January), 124.
25. Critchley and Ferguson, "Migraine" (28 January), 187.
26. Singh et al., "Progesterone," 745–747.
27. Urbach and Gottlieb, *Allergy*, 795–796.
28. Moffat, "Treatment of Menstrual Migraine," 612–615.
29. Urbach and Gottlieb, *Allergy*, 801.
30. The term "eugenics," coined by Francis Galton in 1883, became the name for a movement based on the idea that if a society could control heredity, it could prevent a whole range of social ills—including mental and physical diseases, crime, poverty, and prostitution—to produce happier, healthier, more intelligent communities. Conditions such as syphilis, tuberculosis, mental illness, alcoholism, and epilepsy gravely concerned eugenicists, who diagnosed them as social ills threatening "national degeneracy." Nations around the world embraced a whole range of "social hygiene" policies in the first decades of the twentieth century. Measures such as the promotion of marriage and the sterilization of people deemed "unfit" were aimed at preventing, controlling, or manipulating reproductive practices. See Galton, *Inquiries*, 24. On the history of eugenics, see Levine and Bashford, *Oxford Handbook*, 3–24.
31. Tredgold, "Feeble-Minded," 99, quoted in M. Jackson, *Borderland of Imbecility*, 99.
32. M. Jackson, *Borderland of Imbecility*, 99.
33. Levine and Bashford, *Oxford Handbook*, 3–4.
34. M. Thomson, *Psychological Subjects*, 86.
35. Crookshank, *Migraine*, 75, 82–88, 89–94.
36. Loughran, "Shell-Shock," 79–95, 82, 89.
37. Schimmel, *Sigmund Freud's Discovery*, 122.
38. Karwautz et al., "Freud and Migraine," 22–26.
39. Loughran, "Shell-Shock," 87.
40. See, for example, Slight, "Migraine."
41. Alvarez, *How to Live with Your Migraine*, 1–2.
42. Alvarez, "Migrainous Personality," 1–8.
43. Wolff, *Headache*, 321–322, 328.
44. Wolff, *Headache*, 344–345.
45. Graham, *Treatment of Migraine*, 8, 26, 38.
46. Graham, *Treatment of Migraine*, 87–88.
47. Graham, *Treatment of Migraine*, 89–93.
48. Foster, "General Aspects of Management," 142.

49. Critchley, "Discarded Theories," 245.
50. Graham and Wolff, "Mechanism of Migraine Headache."
51. Kempner, *Not Tonight*, 35–37.
52. Goodman and Gilman, *Pharmacological Basis of Therapeutics*, 878–880.
53. German physician Albert Eulenberg reported success with ergot by injection, but in its natural state, ergot contains a varying alkaloid content, making any dosage unreliable. In 1918, Arthur Stoll, a biochemist at Sandoz, isolated ergotamine tartrate, a much more reliable substance. See Eadie, "Ergot of Rye," 4–7; Tfelt-Hansen and Koehler, "One Hundred Years," 753.
54. Graham and Wolff, "Mechanism of Migraine Headache," 740. I had hoped to reproduce this graph, but gaining permission for the image rights was prohibitively expensive.
55. Graham and Wolff, "Mechanism of Migraine Headache," 762.
56. At that time, the drug was called E.C. 110, and it would later be named Cafegot. Burroughs Wellcome had long been interested in ergot derivatives. Ergotin had been one of its earliest products developed in the 1880s, and the company had continued to work on obstetric applications for ergot through the first decades of the twentieth century. See Church and Tansey, *Burroughs Wellcome & Co.*, 128, 177, 186–187, 309–312.
57. H. Stewart, "Ergometrine for Migraine," 745.
58. "Suggestions for New Product."
59. "Migril," folder 2 (1961).
60. "Migril," folder 1 (1957–1960).
61. Herzberg, *Happy Pills in America*, 182.
62. In modern websites that market migraine drugs, Kempner has found that the dominant imagery is of attractive, well-presented, white, middle-class women. Images of men are "so deeply buried in internal pages that readers might never find them." See Kempner, *Not Tonight*, 107–108.
63. "Migril," folder 7 (1969).
64. Waters, "Controlled Clinical Trial," 325–327.
65. Foster, "General Aspects of Management," 138–40; Tfelt-Hansen and Koehler, "History of Use," 877–881.
66. Graham, *Treatment of Migraine*, 58–67, 70, 72.
67. Walker, "Place of Allergy," 23.
68. Overy and Tansey, *Migraine*, 30–31.
69. Blau, "Problems and Paradoxes," 6–7.
70. Foster, "General Aspects of Management," 140.
71. Graham, *Treatment of Migraine*, 104.
72. Wilkinson, "Migraine," 754–755.
73. Graham, *Treatment of Migraine*, 107.
74. This migraine clinic was founded by Eileen Lecky, a health worker from the London district of Putney, in response to general practitioners who wanted a clinic along the lines of a hospital outpatient department, where they could refer patients unable to afford specialist consultant fees. See Sutherland, *Migraine Clinic*, 10–11, 24–25.
75. Sutherland, *Migraine Clinic*, 32, 53, 63–64.
76. Sicuteri, "Prophylactic and Therapeutic Properties." See also Kempner, *Not Tonight*, 45.
77. Neil Raskin, cited in Solomon et al., "American Headache," 672.
78. Blau, "Problems and Paradoxes," 6–7; Rawson and Liversedge, "Clinical Pharmacology of Migraine," 145, 150–151.
79. In the 1930s, Italian pharmacologist and chemist Vittorio Erspamer had discovered a substance he named enteramine. Later, enteramine and serotonin were both found to be 5-hydroxytryptamine, but Upjohn, the American drug company, was the first to synthesize it and make it available for researchers, and kept the name serotonin. On this history, see Whitaker-Azmitia, "Discovery of Serotonin," 2S–3S.

80. Sanders-Bush, *Serotonin Receptors*, 3–5.
81. Koehler and Tfelt-Hansen, “History of Methysergide,” 1127.
82. Anthony and Lance, “Role of Serotonin,” 120.
83. James Lance has recalled this era in an interview for the Australian Academy of Science. See Burke, “Professor James Lance, Neurologist.”
84. Hanington and Harper, “Role of Tyramine,” 84.
85. Hanington, “Migraine: A Platelet Disorder,” 720.
86. Anthony and Lance, “Role of Serotonin,” 113–119.
87. Sicuteri et al., “Biochemical Investigations.” Swiss neurologist Harwig Heyck proposed that during a migraine attack, arteriovenous shunts opened to divert channels of blood, thereby withdrawing blood from the capillaries (thus explaining the characteristic facial pallor) and directing it into the veins, causing them to dilate with the extra pressure. Heyck theorized that there must be a special “neuronal or biochemical stimuli” that caused the shunts to open. See Heyck, “Pathogenesis of Migraine,” 14.
88. Cumings, “Speculation Not the Way,” 1, 4.
89. Humphrey, “Discovery and Development,” 686; Humphrey, “Discovery of Sumatriptan,” 4–5.
90. Humphrey, “5-Hydroxytryptamine,” S38–S44; Overy and Tansey, *Migraine*, 47.
91. Cady et al., “Treatment of Acute Migraine,” 2831.
92. Regush, “Migrainekiller,” 26–31, 70.
93. Overy and Tansey, *Migraine*, 44–45. In 2002, in response to evidence that concerns about cardiovascular safety were limiting the use of triptans, the American Headache Society convened the Triptan Cardiovascular Safety Expert Panel to evaluate the evidence. The panel concluded that while adverse cardiovascular events had occurred after the use of triptans, the incidence and risk appeared to be “extremely low” in patients without known coronary artery disease, and “in patients at low risk of coronary heart disease, triptans can be prescribed confidently without the need for prior cardiac status evaluation.” See Triptan Cardiovascular Safety Expert Panel, “Consensus Statement,” 422–423.
94. Overy and Tansey, *Migraine*, 13.
95. Kempner, *Not Tonight*, 62.
96. Blau, *Headache and Migraine Handbook*, 87–88.
97. Blau, “Migraine Pathogenesis,” 438–439.
98. In 1941, after observing his scotoma for a number of years, American psychologist Karl Spencer Lashley had proposed that a wave of intense excitation across the visual cortex was propagated at a rate of three millimeters per minute. In 1943, Brazilian neurophysiologist Aristides Leão, then a PhD student, electrically stimulated rabbits’ brains and discovered a marked reduction of electrical activity, which then spread out from the stimulated region across the cerebral cortex. Leão proposed that this “cortical spreading depression” might be related to migraine aura, but it wasn’t until 1958 that Peter Milner linked Leão and Lashley’s observations. See Leão, “Spreading Depression”; Lashley, “Patterns”; Milner, “Note”; Tfelt-Hansen and Koehler, “One Hundred Years,” 757–758.
99. Olesen et al., “Common Migraine Attack,” 438–449.
100. Wilkinson, “Are Classical and Common Migraine Different Entities?,” 211–212.
101. Ziegler, “Headache Symptom,” 273–274.
102. Allan, “Sex Ratio in Migraine”; Waters and O’Connor, “Prevalence of Migraine,” 616.
103. Abramson et al., “Migraine and Non-migrainous Headaches,” 188.
104. Lance and Olesen, “Preface,” 9.
105. Overy and Tansey, *Migraine*, 33–40.
106. Rasmussen, “Epidemiology of Headache,” 1468.
107. Overy and Tansey, *Migraine*, 65.

108. Critchley, “Towards a Definition,” 1–2.
109. Overy and Tansey, *Migraine*, 59.
110. Humphrey and Goadsby, “Mode of Action.”
111. Goadsby, “Vascular Theory of Migraine,” 7.
112. As reported by Anne MacGregor to the Wellcome Witness Seminar in 2013. I am grateful to Professor MacGregor for sharing further thoughts on this point by email. See also Epstein, *Inclusion*, 4–5; Overy and Tansey, *Migraine*, 10–11; Peterlin et al., “Sex Matters,” 839–842.

### Chapter 9 • “If I Could Harness Pain”

1. Untitled artwork, submitted to the Third Migraine Art Competition, unnamed artist, 1981, image 14, MAC. All of the images referred to in this chapter (unless otherwise indicated) are from the Migraine Action Art Collection, which, at the time of writing, was in the process of being transferred to the Wellcome Library. From 2016 to 2018 the full collection had been available online at <http://www.migraineart.org.uk>. This website was the result of a collaboration with Migraine Action to catalog and digitize the art collection, a project funded by the University of Leicester. I am indebted to Dr. Steve Ling for his work cataloging the collection and assisting the website project.
2. Podoll and Robinson, *Migraine Art*, 71. In their book, Klaus Podoll and Derek Robinson reproduce three hundred of the artworks from the collection.
3. Nearly a third of the entrants to the competition paid £1 to have their artwork returned to them.
4. Migraine Action, “Brief History.” In 1965, the British Migraine Association split into two organizations. The Association (later to be renamed Migraine Action) would continue to work with and advocate for patients, and the Migraine Trust would focus on medical research and education. In 2018, Migraine Action closed. Its assets were donated to the Migraine Trust to form a single, larger charity, and the Wellcome Library acquired the Migraine Art Collection.
5. P. Johnson, “Consumer’s End,” 3–4.
6. “Migraine (Treatment),” House of Commons debate, 4 March 1960, <http://hansard.millbanksystems.com/commons/1960/mar/04/migraine-treatment/>.
7. Wailoo, *Pain: A Political History*, 29–32, 58.
8. Wailoo, *Pain: A Political History*, 58–59, 64.
9. Ham and Alberti, “Medical Profession,” 839.
10. At that time, there were two clinics in London: Critchley’s own at King’s College London, opened in 1955, and another at the National Hospital in Queen Square. Both clinics were held in the evening, so patients could attend without taking time off from work. See Critchley, “Migraine: General Remarks,” 167.
11. Marcia Wilkinson’s clinic would become the City Migraine Clinic. She later opened it as an independent medical charity, the City of London Migraine Clinic, in 1980. See Anon., “Editorial: Migraine Clinics,” 376; Overy and Tansey, *Migraine*, 67.
12. Elizabeth Garrett Anderson was the first woman in Britain to obtain the title of MD. Garrett Anderson herself explained that she chose to study migraine for quite pragmatic reasons: she needed a topic for her MD studies that could be “well-studied without post-mortem observations, of which I can have but very few in either private or dispensary [clinic] practice.” Marcia Wilkinson sent for this thesis from Paris in 1966 and translated it into English. Wilkinson was the first recipient of the International Headache Society’s Elizabeth Garrett Anderson Award, established in 2000 to reward work by women in the field of migraine. See Wilkinson and Isler, “Pioneer Woman’s View,” 3.
13. Overy and Tansey, *Migraine*, 21–22.
14. Zilkha, “Clinics,” 3.
15. Hanington, “Preliminary Report on Tyramine,” 550–551.

16. Hanington and Harper, "Role of Tyramine."
17. Tfelt-Hansen, "History of Headache Research," 748–752.
18. Mathew et al., "Transformation of Episodic Migraine," 66–68.
19. Studies on patients from specialist clinics include Hay, "Treatment of Pain Trigger Areas"; Henryk-Gutt and Rees, "Psychological Aspects of Medicine"; Rydzewski, "Serotonin (5-HT) in Migraine"; Wainscott et al., "Outcome of Pregnancy"; Wilkinson and Woodrow, "Migraine and Weather."
20. G. Green, *Last Angry Man*, 385.
21. Didion, "In Bed," 168–169.
22. Sacks, *Migraine* (1985), 134–135. By the 1990s, however, use of the term "migraineur" seems to have declined. It is perhaps not an accident that this coincides with the rise of neurological theories and the efficacy of triptans.
23. Margoshes, "Don't Say My Migraines."
24. Hogan, *Healing Arts*, 195–196.
25. Hachinski et al., "Visual Symptoms."
26. Cardinal, "Outsider Art," 1462.
27. It is important to acknowledge that the therapeutic value of art is by no means universal. In one study from 2005, looking at the relationship between artmaking and migraine pain, the authors found that more respondents felt creating artwork was likely to trigger or worsen their headaches than to alleviate or lessen their pain, with factors such as the odor of materials or solvents and lighting conditions being identified as important. Many found themselves physically unable to execute their ideas during a migraine. "My creativity seems to increase while having a headache," one respondent commented, "but my ability to put pen to paper must wait for the pain to subside." As the authors of the report suggest, such evidence challenged "a basic truism of art therapy . . . the implication that *all* art is healing to *all* people under *all* conditions." See Vick and Sexton-Radek, "Art and Migraine," 198–199.
28. Clonidine had vasoactive properties and had been used, among other things, for hypertension and menopausal hot flashes. It was first reported as a migraine prophylactic by Marcia Wilkinson in 1969. See Wilkinson, "Clonidine for Migraine," 430.
29. Jean Butter's picture is reproduced in Hay, "Migraine."
30. Podoll and Robinson, *Migraine Art*, 34–37. Across the four competitions, Jean Butter would contribute at least seven pieces.
31. The forms of aura listed by Peter Wilson were "the shimmering stars of teichopsia; the half vision of hemianopia; the bright-edged castellated lines of fortification spectrum; of scintillating scotoma; and tunnel vision." See P. Wilson, "National Migraine Art Competition."
32. Podoll and Robinson, *Migraine Art*, 161–162.
33. Levy, *A Brain Wider*, 55–58.
34. Nat Blau is referring to image 48 from the Migraine Art Collection. See Blau, *Headache and Migraine Handbook*, 76–77.
35. Lomas and Howell, "Medical Imagery."
36. Kettenmann, *Frida Kahlo*, 67–68.
37. Jordanova, "Beth Fisher."
38. Frank, "Rhetoric of Self-Change," 40.
39. John Joseph Brennan, quoted in Podoll and Robinson, "Migraine Experiences," 264. *Migraine Man* (MAC 440) is a surreal figure made of geometric shapes, with crooks reminiscent of Salvador Dali's paintings replacing the left leg, and arcs and spheres suggestive of migraine aura swirling around the figure's head, with the point of a sharp cone piercing the head where an eye should be.
40. Charmaz, *Good Days, Bad Days*, 108–109.
41. Woolf, "On Being Ill."

42. Biro, *Language of Pain*, 77. Elaine Scarry suggested that physical pain “does not simply resist language but actively destroys it.” See Scarry, *Body in Pain*. While Scarry’s approach has been influential, it has also been criticized. If we assume there is “no language for pain,” Lucy Bending responds, then “authority for representing that pain passes over to another group, with the result that those who suffer lose control over their own suffering.” See Bending, *Representation of Bodily Pain*, 115.
43. Bourke, *Story of Pain*, 55, 58–65.
44. Podoll and Robinson, *Migraine Art*, 129.
45. Untitled artwork, submitted to the Migraine Art Competition, unnamed artist, n.d., MAC 484.
46. Untitled artwork, submitted to the Second Migraine Art Competition, unnamed artist, 1983, MAC 476.
47. Untitled artwork, submitted to Second Migraine Art Competition, unnamed artist, 1983, MAC 478.
48. Untitled artwork, submitted to Fourth Migraine Art Competition, unnamed artist, 1987, MAC 233.
49. Sacks, *Migraine* (1992), 281–282.
50. *A Migraine Attack*, submitted to the Second Migraine Art Competition, unnamed artist, 1983, MAC 77; *Go Away, Go Away, Go Away*, submitted to the Fourth Migraine Art Competition, unnamed artist, 1987, MAC 106.
51. An unnamed artist, quoted in Podoll and Robinson, *Migraine Art*, 73.
52. Untitled artwork, submitted to the Migraine Art Competition, unnamed artist (under-16 category), n.d., MAC 291.
53. Untitled artwork, submitted to the Migraine Art Competition, unnamed artist (under-16 category), n.d., MAC 18.
54. *Please Be Quiet. Do Not Disturb*, submitted to the Migraine Art Competition, unnamed artist (under-16 category), n.d., MAC 327.
55. *Migraine! Cause and Effect*, submitted to the First Migraine Art Competition, unnamed artist, 1981, MAC 513.
56. *How Can You Drive When the Road Looks Like This?*, submitted to the First Migraine Art Competition, unnamed artist, 1981, MAC 169.
57. Untitled artwork, submitted to the Second Migraine Art Competition, unnamed artist, 1983, MAC 339.
58. Nat Blau is referring to image 48 from the Migraine Art Collection. See Blau, *Headache and Migraine Handbook*, 76–77.
59. “Test Tube Baby,” 31 July 1978, *Time Magazine Covers*; Wigley, “Best 80s Sci-Film Posters.”
60. Didion, “In Bed,” 172.
61. Podoll and Robinson, *Migraine Art*, 71.
62. *To Fit Again*, submitted to the Third Migraine Art Competition, unnamed artist, 1985, MAC 431. The red lion in the left-hand corner represents the logo of the British Migraine Association, and the “Let Me Help” below it suggests the importance of this charity to people with migraine.
63. *Migraine at the Gala Concert*, submitted to the Second Migraine Art Competition, unnamed artist, 1983, MAC 447.
64. *The Migraine Life*, submitted to the Third Migraine Art Competition, unnamed artist, 1985, MAC 385.
65. *Sorry Closed for Migraine*, submitted to the Fourth Migraine Art Competition, unnamed artist, 1987, MAC 57.
66. *Yr 1911*, submitted to the Second Migraine Art Competition, unnamed artist, 1982, MAC 333.

67. Untitled artwork, submitted to the Second Migraine Art Competition, unnamed artist, 1982, MAC 164.
68. Untitled artwork, submitted to the Second Migraine Art Competition, unnamed artist, 1983, MAC 129.
69. Untitled artwork, submitted to the Second Migraine Art Competition, unnamed Artist (under-16 category), 1983, MAC 448; Podoll and Robinson, *Migraine Art*, 50–51.
70. Humphrey, “Discovery and Development,” 685.
71. Podoll, “Further Competitions.”
72. Glasier, “Stunning Look at Life.”
73. F. Kelly, “Experience ‘Maison Migraine.’”
74. Debbie Ayles’s paintings, photographs, and comments can be viewed on the Wellcome Collection: Images website.
75. For more on this aspect of YouTube, see Foxhall, “Digital Narratives.”

### *Chapter 10 • Conclusion*

1. For erenumab, researchers achieved a 50% or greater reduction in the number of migraine days per month for around half of the patients included in the trial. For fremanezumab, the results were a 50% reduction in migraine days for 38% of the people in the group injected quarterly, and 41% in the group injected monthly. Alder Biopharmaceuticals announced that 61% of patients on the eptinezumab trial had achieved a 50% or greater reduction in migraine days over a three-month period. See Goadsby et al., “Controlled Trial of Erenumab”; Silberstein et al., “Fremanezumab.”
2. American Headache Society, “AHS Meeting Release CGRP”; Robinson, “News.” The four different drugs were eptinezumab (Alder Biopharmaceuticals), galcanezumab (Eli Lilly & Company), fremanezumab (Teva Pharmaceutical Industries), and erenumab (Amgen and Novartis).
3. Edvinsson, “Trigeminovascular Pathway,” 47–55; Lassen et al., “CGRP,” 54–61; Wrobel Goldberg and Silberstein, “Targeting CGRP.”
4. J. Hansen et al., “Calcitonin Gene-Related Peptide.”
5. Edvinsson, “CGRP Receptor Antagonists.”
6. Wrobel Goldberg and Silberstein, “Targeting CGRP,” 447–448.
7. For useful overviews of CGRP and migraine in accessible language, see Underwood, “FDA Just Approved”; Yeh, “Monoclonal Antibodies.”
8. American Headache Society, “AHS Meeting Release CGRP?”
9. Staines, “Novartis/Amgen’s Migraine Drug.”
10. T. Smith, “Some Insurance Companies.” There are precedents. Health insurers have limited access to PCKS9, a cholesterol-controlling drug with a similar cost.
11. Wilper et al., “Impact of Insurance,” 1180–1182.
12. National Health Service, “Botox Gets Nod”; National Health Service England, “Clinical Commissioning Policy.” In January 2019, NICE made an initial decision not to recommend erenumab for routine use in the NHS.
13. Martelletti, “Application of CGRP”; World Health Organization, “WHO Model List.”
14. Tekle Haimanot, “Burden of Headache”; W. Stewart et al., “Variation in Migraine Prevalence.”
15. Charleston and Burke, “Do Racial/Ethnic Disparities Exist?,” 879–881.
16. Loder et al., “Prevalence, Burden, and Treatment,” 224.
17. Robbins and Bernat, “Minority Representation.”
18. Hoffman et al., “Racial Bias.”
19. Leonardi and Mathers, “Global Burden.”
20. Steiner et al., “Migraine: The Seventh Disabler.”
21. See “The Global Campaign,” Lifting the Burden, <http://www.l-t-b.org/index.cfm/spKey>



/the\_global\_campaign.html. For a history of the Global Burden of Disease reports and links to various findings, see the Institute for Health Metrics and Evaluation website, <http://www.healthdata.org/gbd/about/history/>.

22. Steiner et al., “Migraine: The Seventh Disabler.”
23. Steiner et al., “Migraine: The Seventh Disabler.”
24. Steiner et al., “GBD 2015.”
25. Headache Classification Subcommittee, *ICHD-2*. *ICHD-2* also introduced subcategories for medication overuse headache attributed to ergotamine, triptan, an analgesic, an opioid, or a combination of medications. See Silberstein et al., “*ICHD-II—Revision of Criteria*.”
26. Headache Classification Subcommittee, *ICHD-3*, 24. This was released for immediate use in beta form in 2013 and published as a final version in 2018. Following a petition from a number of experts in the headache field, in December 2017, the US Food and Drug Administration confirmed that in the future, they would require sponsors of over-the-counter migraine products to include a specific warning: “Headaches may worsen if this product is used for 10 or more days per month.”
27. Torres-Ferrús et al., “When Does Chronic Migraine Strike?,” 105, 112.
28. Anttila et al., “Genetics of Migraine.”
29. Bigal et al., “Migraine in Adolescents.”
30. For instance, in early 2018, researchers published a study proposing that while the ancestral allele of the gene *TRPM8* was protective of migraine, an adaptation of the gene (which is, as the authors of the study explain, the “only known receptor to mediate the perception of moderate cold temperature in humans”) has lost that characteristic. The adapted gene, which correlates strongly with latitude and temperature, is significantly more frequent in Finland than in Nigeria, a result, the authors suggest, of positive natural selection and a possible explanation for higher rates of migraine prevalence among individuals of European descent. See Key et al., “Human Local Adaptation.”
31. Gormley et al., “Migraine Genetics,” 1.
32. Borsook et al., “Can Imaging Change,” 371.
33. Kempner, *Not Tonight*, 160–162.