

20. For the Barcelona measurements, see Méchain's later admission that he was crippled in his right arm and had to operate 'with the help of others' in AOP E2-19, Méchain to Lalande, 4 messidor IV [22 June 1796].
21. For the Mont-Jouy triangulations, see Delambre, *Base*, 1, p. 503. For the weather on 16 March, see *Diario de Barcelona* 77 (18 March 1794), p. 305.
22. For the tensions in Barcelona, see Roua i Aulinas, *Guerra Gran*, p. 75. Herr, *Eighteenth-Century Spain*, pp. 311-12.
23. For Méchain's departure from Barcelona, see BUP MS168.1, Méchain to Slop, 6 September 1794. For the lightning strike, see AOAB Cart. 88, Méchain to Oriani, 2 April 1795.
24. SHAT B4 112, Dugommier to La Unión, 28 prairial II [16 June 1794].
25. SHAT B4 112, Dugommier to La Unión, 15 messidor II [3 July 1794].
26. La Unión to Dugommier [June-July 1794], in J. Delbar, *La comte de La Unión*, *Estudios religiosos* 47 (1889), pp. 235-54; 48 (1889), pp. 57-85, 278-98, 428-50; quotations on 48, p. 287.
27. Delbrel, 'Notes du Conventionel Delbrel', 27 brumaire III [17 November 1794], *Revue de la Révolution* 5 (1885), p. 53.

Chapter 5 A Calculating People

1. Charles de Secondat de Montesquieu, *Esprit des lois* [1750], in Montesquieu, *Œuvres complètes* (Paris: Garnier, 1875), 5, pp. 412-13.
2. Marie-Jean-Antoine-Nicolas Caritat de Condorcet, *Observations... sur le vingt-neuvième livre de l'Esprit des lois* [1795], in Condorcet, *Œuvres* (Paris: Didot, 1847), 1, pp. 376-81.
3. For the Committee of Public Safety's pleas to use the new measures, see *RACSP* 9 (30 November 1793), p. 63. For the persistence of the metric diversity into 1794, see AN F12^e 208, Min. Aff. Etr. to Comité des Subsistances, 30 nivôse II [19 January 1794].
4. Daryl Hafter, 'Measuring Cloth by the Elbow and Thumb: Resistance to Numbers in France of the 1780s', *Cultures of Control*, ed. Miriam Levin (Amsterdam: Harwood, 2000), pp. 69-79.
5. For an example of the regional diversity of anthropometric measures at the end of the *ancien régime*, see Jean-Baptiste Galley, *Le régime féodal dans le pays de Saint-Etienne* (Paris: Imprimerie de la Loire Républicaine, 1927), pp. 315-16, 326. For examples of anthropometric measures hidden behind seemingly abstract units, see Alfred Antoine Gandilhon, ed., *Département du Cher: Cahiers de doléances du bailliage de Bourges* (Bourges: Tardy-Pigelet, 1910), pp. 768, 770.
6. Witold Kula, *Measures and Men*, trans. R. Szreter (Princeton: Princeton University Press, 1986). The word 'anthropometric' can also mean the measurement of the human body; here, following Kula, it is used to denote measures derived from human needs. See also the prescient article by Marc Bloch, 'Le témoignage des mesures agraires', *Annales d'histoire économique et sociale* 6 (1934), pp. 280-2.
7. Galley, *Régime féodal*, p. 282.
8. For a typical claim of how the creation of uniform and abstract units of land area would improve agricultural productivity, see Bureaux de Pusey, AP 15 (8 May 1790), p. 440. For the most sophisticated recent treatment of agricultural productivity under the *ancien régime*, see Philip T. Hoffman, *Growth in a Traditional Society: The French Countryside, 1450-1815* (Princeton: Princeton University Press, 1996). This study, for all its quantitative virtues, tells us little about agricultural productivity outside 'modern' farms where records were kept, or about the exchanges which dominated early modern transactions. For a contrasting view, see Jean Peltre, *Recherches métrologiques sur les finages lorrains* (Lille: Atelier Reproduction des Thèses, 1977).
9. Young, *Travels*, 2, p. 44-6.
10. Galley, *Régime féodal*, p. 307.
11. For scientific definitions of 'natural', see Maurice Crosland, 'Nature' and Measurement in Eighteenth-Century France, *Studies on Voltaire and the Eighteenth Century* 87 (1972), pp. 277-309.
12. On the theory of the just price, see Raymond de Roover, 'The Concept of the Just Price: Theory and Economic Policy', *Journal of the History of Economic Thought* 18 (1958), pp. 418-34.
13. For Notre-Dame-de-Lisieux and such practices throughout *ancien régime* Europe, see Kula, *Measures and Men*, pp. 194-5.
14. Charles Porée, ed., *Département de l'Yonne: Cahiers de doléances du Bailliage de Sens* (Auxerre: Imprimerie coopérative ouvrière 'l'Universelle', 1906), pp. 177-8. For the acknowledgment by the official of the role played by metrical diversity, see Robert Vivier, 'Contribution à l'étude des anciennes mesures du département d'Indre-et-Loire', *Revue d'histoire économique et sociale* 14 (1926), pp. 180-99; 16 (1928), pp. 182-227, especially 14, p. 196.
15. On the *ancien régime* economy, see Judith Miller, *Mastering the Market: The State and Grain Trade in Northern France, 1700-1860* (Cambridge: Cambridge University Press, 1999), pp. 34-6. Also see Steven L. Kaplan, *The Bakers of Paris and the Bread Question, 1700-1775* (Durham, NC: Duke University Press, 1996). On the distinction between the market principle and the marketplace, see Steven L. Kaplan, *Provisioning Paris: Merchants and Millers in the Grain and Flour Trade during the Eighteenth Century* (Ithaca: Cornell University Press, 1984), pp. 47-8, 68-9. See also Kula, *Measures and Men*, pp. 71-8.
16. Borda, AP 70 (1 August 1793), pp. 117-18. See also my 'Note on Measures'.
17. Lavoisier, 'Eclaircissements historiques sur les mesures des anciens', n.d., *Œuvres*, 6, p. 703.
18. Condorcet, *Sketch for a Historical Picture of the Progress of the Human Mind*, trans. J. Barraclough (London: Weidenfield & Nicolson, 1955), p. 199. K. M. Baker, 'An Unpublished Essay of Condorcet on Technical Methods of Classification', *Annals of Science* 18 (1962), pp. 99-123; Gilles-Gaston Granger, 'Langage universelle et formalisation des sciences: Un fragment inédit de Condorcet', *Revue d'histoire des sciences* 7 (1954), pp. 197-219. Louis Marquet, 'Condorcet et la création du système métrique décimal', in Condorcet, *mathématicien, économiste, philosophe, homme politique*, eds Pierre Crépel and Christian Gilian (Paris: Minerve,

- 1989), pp. 52-62. On Condorcet as a political economist, see Emma Rothschild, *Economic Sentiments: Adam Smith, Condorcet, and the Enlightenment* (Cambridge: Harvard University Press, 2001). On the Enlightenment view of rational language, see Michel Foucault, *The Order of Things: An Archaeology of the Human Sciences* (New York: Random House, 1970), pp. 78-124.
19. Condorcet, *Mémoires sur les monnaies* (Paris: Baudouin, 1790), p. 3.
20. [Prieur], ATPM, *Notions élémentaires sur les nouvelles mesures*, 1st edn (Paris: Imprimerie de la République, IV [1795]), pp. 1, 3-4.
21. BEP Prieur 4.2.3.2. Prieur, 'Motifs', n.d. [1794].
22. BEP Prieur 4.2.3.3. Prieur, 'Chez une peuple', n.d. Also Prieur, *Nouvelle instruction sur les poids et mesures*, 2nd edn (Paris: Du Pont, IV [1795-6]), pp. 26-31.
23. ATPM, *Aux citoyens rédacteurs*, pp. 9-10.
24. For the elimination of patois, see Patrice Higonnet, 'The Politics of Linguistic Terrorism and Grammatical Hegemony during the French Revolution', *Social History* 5 (1980), pp. 41-69. The abbé Henri Grégoire, who led the campaign against patois, segued directly from metric uniformity to linguistic uniformity in his famous denunciation of vandalism; see Grégoire, AP 96 (31 August 1794), p. 154.
25. Romme, 'Rapport sur l'ère de la République', *PVCIP* 2 (20 September 1793), p. 442. Romme initially named the months after the republican virtues. The seasonal names were proposed by the poet Fabre d'Églantine; see Gilbert Romme et al., *Calendrier de la République française* (Paris: Imprimerie Nationale, II [1793]).
26. For Lalande's doubts about the ten-day week, see NYPL *KVR 756, Lalande, preface to Cubières, *Le calendrier républicain, poème en deux chants*, 3rd edn (Paris: Mériot, VII [1798-9]), p. 5.
27. The first proposal for decimal time was read to the National Assembly by Borda, AP 53 (5 November 1792), pp. 583-5. See AN F17 1135, Anon., *Rapport sur les questions relatives au nouveau système boraire* (Paris: Baudelot et Eberhart, pluviose II [January 1794]). J. de Rey Pailhade, 'La montre décimale de Laplace', *Revue chronométrique* 60 (1914), pp. 34-7, 51-6.
28. For metric angles, see BN Le38 2501, Borda et al., *Sur le système général des poids et mesures* (Paris: n.p., 1793), sent to CIP on 29 May 1793. Some navigators were enthusiasts for the reform; see Charles-Pierre Claret de Fleurieu, *Voyage autour du monde* (Paris: Imprimerie de la République, VIII [1798]), 4, pp. iii-viii, 1-130. Other navigators were dubious about the changes and doubted sailors would ever accept them; see Jean-François de Galaup La Pérouse, *Voyage de La Pérouse*, ed. L. A. Milet-Mureau (Paris: Imprimerie de la République, 1797), pp. xxx-xxx.
29. For the decimal log tables, see BI MS883 fol. 38, Condorcet, no title, n.d.; Prony, 'Éclaircissements sur un point d'histoire des tables trigonométriques', *MI* 5 (XII [1803-4]), pp. 67-93; I. Grattan-Guinness, 'Work for the Hairdressers: The Production of Prony's Logarithmic and Trigonometric Tables', *Annals of the History of Computing*

- 12 (1990), pp. 177-85; Lorraine Daston, 'Enlightenment Calculators', *Critical Inquiry* 21 (1994), pp. 182-202. Proposals were also heard to rationalize the measurement of temperature, which was generally measured on the 80° Réaumur scale at this time. Some proposed that it be decimalized according to the plan of Anders Celsius of Sweden; see AN F17 1135, Cotty to CPM, 30 prairial II [18 June 1794].
30. For military exemptions, see Lavoisier, 'Rapport et projet de décret sur la réquisition des ouvriers', 1793, in *Œuvres*, 6, pp. 665-9. See also Delambre's request to exempt Bellet in *PVCIP* 2 (21 September, 1 October 1793), pp. 452, 520, 527-9.
31. For Lavoisier's attempt to save the Academy, see Lavoisier to Lakanal, 'Observations sur l'Académie des Sciences', 17 July 1793, in *Œuvres*, 6, pp. 621-2. For Borda's attempt to save Lavoisier, see AN F17 4770, Borda and Haüy, 'Extrait de registre des délibérations de la CPM', 28 frimaire II [28 December 1793]; received by the Comité de Sûreté Générale on 2 nivôse II [22 December 1793]; and ignored on 29 frimaire II [18 January 1794]. For the purge, see *PVCIP*, 3, pp. 233-42.
32. Delambre, *Grandeur*, p. 213.
33. BEP Prieur 4.2.1.3. Prieur, 'L'uniformité des poids et mesures', [1794].
34. AN F7 4722, Chalandon and Wibert, 'Aujourd'hui... d'Assy', 12 pluviose II [31 January 1794]. For the sealing of the d'Assy home, see AN F7 4722, Chalandon and Wibert, 'd'Assy', 19 frimaire II [9 December 1793]. For d'Assy's arrest, see AN F7 4722, Comité de Sûreté Générale, 'Geoffroy d'Assy', 6 pluviose II [25 January 1794].
35. For Delambre's return to Paris, see Delambre, 'Mesure du méridien, dépense faite par Delambre', 26 floréal III [15 May 1795] in *Observatoire de Paris, Longueur et temps*. For Delambre's proof of residence, see AN F12 1289, Borda and Haüy (CPM) to Paré (Min. Int.), 23 frimaire II [13 December 1793]; Min. Int. to Borda, 29 frimaire II [19 December 1793].
36. AN F7 4666, Heuvald and Wibert, 'Delambre', 11 ventôse II [1 March 1794]; also, 13 pluviose II [1 February 1794].
37. Delambre, *Base*, 1, p. 52.
38. Lagrange's comment reported in Delambre, 'Notice sur la vie et les oeuvres de M. le comte J.-L. Lagrange', in Lagrange, *Œuvres* (Paris: Gauthier-Villars, 1867), 1, p. xl.
39. AN W410, Fouquier, 'Jugement qui condamne', 4 messidor II [22 June 1794]; 'Procès-verbal d'exécution de mort', 21 messidor II [9 July 1794]. Cifflinat, 'Noms', 21 messidor II [9 July 1794]. For an account of the accusations against the Luxembourg prisoners, see Henri Wallon, *Le tribunal révolutionnaire*, 2nd edn (Paris: Plon, 1900), 2, pp. 332-64, esp. pp. 347-9.
40. For further visits of Delambre to Paris, see AN F7 4722, d'Assy, 17 prairial II [5 June 1794]; 23 prairial II [11 June 1794]. Delambre 'Réclamation', 21 nivôse III [10 January 1795], from catalogue of Terry Bodin, *Autographes*, September 2000. For the fast pace of the tragedy, see CUS, Delambre to Cit. Charles (Prof. Physique), 27 vendémiaire III [18 October 1794].

41. Devic, *Cassini IV*, p. 187. See also Wolf, *Observatoire*, pp. 338-46.
42. AN F17 1065, 'Les astronomes de l'Observatoire de la République au CIP', 26 vendémiaire II [17 October 1795]. For their astronomical collaboration, see Cassini IV, Nouet, Villeneuve and Ruelle, 'Extrait des observations', *MA* (1786), pp. 314-17.
43. AAS 1.44, Lalande, 'Journal', p. 64. See also AN F17 1065, Professeurs de l'Observatoire to Convention Nationale, 1 ventôse II [19 February 1794].
44. On the Observatory during the Revolution, see Wolf, *Observatoire*, pp. 353-9. See also Devic, *Cassini IV*, pp. 170-221. For the order evicting Cassini, see Perry, 'Billet', 4 October 1793, in Claude Teillet, 'Cassini IV, Témoin de la Révolution', *Actes du colloque de Clermont: La Révolution dans le Clermontois et dans l'Oise*, 7, 8 October 1989 (Clermont): GEMOB, 1990), p. 72.
45. The original accusation against Ruelle has been lost, but is summarized in *PVCIP* 4 (27 thermidor II [14 August 1794]), p. 941. For the invitation to Delambre, see *PVCIP* 4 (9 fructidor III [26 August 1794]), p. 984.
46. For the Bureau, see Henri Grégoire, *Rapport sur l'établissement du Bureau des Longitudes, séance du 7 messidor III* [25 June 1795], (Paris: Imprimerie Nationale, messidor III [June 1795]).
47. Ruelle begged for release to visit his wife, a longtime servant to the Cassinis, and to see his dying six-year-old son; see AN F7 4775(4), Ruelle to Commission des Admin. Civile, 24 vendémiaire III [15 October 1794]; AN F17 1065, Lalande to CIP, 29 vendémiaire IV [21 October 1795].
48. Jean-Dominique Cassini IV, 'Mon apologie à un de mes confrères' [1795-6], in *Riens qui vaillent* ([Paris]: n.p., 1842), p. 70. Cassini IV did show up for one early meeting of the Bureau on 25 July 1795; see Bigourdan, 'Bureau des Longitudes', (1928), pp. A16-18. For Delambre's efforts on Cassini's behalf, see Delambre, 'Réponse à la note' [1796], in Bigourdan, 'Bureau des Longitudes', (1928), p. A41.
49. Cassini IV, 'Mon apologie' [1795-6], pp. 63-76.
50. Lalande, 'Testament moral', in Aimable, *Lalande*, pp. 50, 53. For the admission of women to the College and teaching, see BVCS MS99, Lalande, 'Journal', 1790 and 5 May 1791. For his purple waistcoat, see BYU, Lalande to Pery, 23 July [1788]. For his umbrella, see BYU Delambre folder 8, Delambre to Lalande, 7 May 1792. Lalande stopped writing in his personal diary in 1793-4 in case the Revolutionary police seized his papers; see AAS Dossier Lalande, Synopsis of Lalande, 'Journal, 1756-1807'.
51. Lalande to Amélie, 9 October 1793, in Raspail, 'Lalande', p. 243. On the protection afforded by his atheism, see Lalande in Sylvain Maréchal, *Dictionnaire des athées* (Paris: Grabit, VIII [1799-1800]), p. 227.
52. Delambre, 'Lalande', *Biographie universelle*, p. 613. Du Pont, 'Discours prononcé ... aux obsèques de Joseph-Jérôme de Lalande', *Moniteur* 103 (6 April 1807), pp. 11-12; see also [Du Pont] to Lalande, 24 August 1793, in AAS Dossier Lalande, Synopsis of Lalande, 'Journal, 1756-1807'. For his risky publications, see BNR Fr 12273, Lalande, marginal notes in his own 'Eloge de Bailly', *Décade philosophique*, 30 pluviôse III [18 February 1795].
53. Raspail, 'Lalande', p. 243. See also BN Rés 3640, [Lalande], *L'ether, ou l'être suprême élémentaire [et pneumatique]* (Paris: Petits Augustins, 1796).
54. CUS, Lalande to Président du Tribunal Criminel, 8 vendémiaire IV [30 September 1795].
55. CUS, Lalande to [unknown], 25 March 1797. For his progress on his stars, see BYU, Lalande to Pery, 1 messidor II [19 June 1794]; APS, Lalande to Hassler, 12 October 1794. For 41,000 stars, see Lalande, *Bibliographie astronomique*, p. 781.
56. For Delambre's passport, see Municipalité de Bruyères-Libre, 'Certificat ... Delambre', 17 prairial III [5 June 1795], in Bigourdan, *Système métrique*, p. 134. Delambre apparently had a cousin who emigrated, and this in itself could have been risky for him; see CUS, J.-B.-J. Delambre to [cousin] Delambre, notary, 7 floréal [c. 1800]. For his observations in April-May 1795, see Bigourdan, *Astronomie d'observation*, p. 170.
57. *PVCIP* 6 (19 floréal III [8 May 1795]), p. 187. For Delambre's participation in the calendar reform, see *PVCIP* 6 (20, 29 germinal, 19 floréal III [9, 18 April, 8 May 1795]), pp. 180-8. For Delambre's opinion as to the impossibility of reconciling the two dates, see AOP Z137(2), Delambre (from Bruyères-Libre) to Romme [1795]; Delambre, *Astronomie théorique et pratique* (Paris: Courcier, 1814), 3, p. 696. For background, see Michel Froeschlé, 'Le calendrier républicain correspondait-il à une nécessité scientifique?', *Scientifiques et sociétés pendant la Révolution*, Actes du 114e Congrès National des Sociétés Savantes (Paris: Comité des Travaux Historiques et Scientifiques, 1990), pp. 454-65; Bruno Morando et al., 'Le calendrier républicain', *Astronomie* (June 1989), pp. 269-74.
58. SHAT 3M4, Calon to Méchain, 13 pluviôse III [1 February 1795]. Numa Broc, 'Un musée de géographie en 1795', *Revue d'histoire des sciences* 27 (1974), pp. 37-43; Patrice Bret, 'Le Dépôt Général de la Guerre et la formation scientifique des ingénieurs-géographes militaires en France (1789-1830)', *Annals of Science* 48 (1991), pp. 113-57. Berthaut, *Ingénieurs géographes*.
59. For Calon's solicitation of Delambre, see SHAT 3M4, Calon to Delambre (at Bruyères-Libre), 12 brumaire III [2 November 1794]. For Calon's assumption that Delambre was in prison, see Delambre, *Grandeur*, p. 216.
60. For the development of the metric law, see Prieur, *Rapport sur les moyens*, read to the National Convention on 25 fructidor III [11 September 1794], (Paris: Imprimerie Nationale, vendémiaire IV [September-October 1794]). Prieur, *PVCIP* 5 (11 ventôse III [1 March 1795]), pp. 551-63. The law of 1 vendémiaire IV [23 September 1795] declared that the use of the metre would become obligatory throughout Paris in three months, on 1 nivôse IV [22 December 1795]. For a lukewarm defence of decimal time, see Lagrange, *PVCIP* 3 (29 ventôse II [19 March 1794]), pp. 605-6.

61. AN AFII 67 plaq. 496, Prieur, 'Arrêté relatif aux poids et mesures', 12 prairial III [31 May 1795].
62. AOP E2-19, 'Extrait de registre des délibérations du CIP', 18 floréal III [7 May 1795]. See also *PVCIP* 6 (12 prairial III [31 May 1795]), pp. 244-5, 247.
63. AOP E2-19, Prieur to Delambre, 14 prairial III [2 May 1795].
64. AOP E2-19, Delambre to Méchain, 12 frimaire IV [3 December 1795]. See also, Delambre, *Grandeur*, p. 217.
65. ENPC MS726, Delambre, 'Mesure du méridien', 19 messidor II [9 July 1794]. *PVCIP* 5 (8 prairial III [27 May 1795]), p. 236. Delambre's colleagues on the various committees spoke up on his behalf. AN F17 1135, ATPM, 'Rapport présenté au CIP', 29 floréal III [18 May 1795], 'Projet d'arrêté du CIP', 12 prairial III [27, 31 May 1795].
66. On Delambre's equipment, see BMR Tarbé XXI/137, Delambre, 'Etat de dépense pour la mesure de la méridienne', 1 ventôse V [19 February 1797]. His new assistant was named Plessis and had little astronomical experience.
67. On Bourges, see AOP E2-1, Delambre, 'Reprise des opérations', messidor II [June 1795]. KM, Delambre, *Base*, 1, p. 210.
68. Emile Mesle, *Histoire de Bourges* (Roanne: Horvath, 1988), pp. 247-9.
69. On the Bourges pelican, see AOP E2-6, Delambre, 'Registre', p. 279; AOP E2-19, Delambre to Méchain, 12 frimaire IV [3 December 1795].
70. For Delambre's expenses, see BMR Tarbé XXI/137, Delambre, 'Etat de dépense pour la mesure de la méridienne', 1 ventôse V [19 February 1797].
71. For Delambre's plea to Calon for funds, see SHAT 3M4, Calon to Delambre, 26 thermidor III, 14, 22 vendémiaire, 29 brumaire IV [13 August, 6, 15 October, 20 November 1795]. For Delambre's military rank, see AOP MS1033C, Delambre to Méchain, 17 fructidor III [3 September 1795]. For Méchain's military rank, see AOP E2-19, Méchain to Delambre, 8 thermidor III [26 July 1795].
72. AOP E2-19, Delambre to Méchain, 12 frimaire IV [3 December 1795].
73. Christophe Sauvageon, c. 1700, in Bernard Edeine, *La Sologne: Contribution aux études d'éthnologie métropolitaine* (Paris: Mouton, 1974), p. 193.
74. Légiér, 'Traditions et usages de la Sologne', *Mémoires de l'Académie Celtique* 2 (1808), p. 206. On the *dindon*, see Sauvageon, c. 1700, in Edeine, *Sologne*, pp. 681-3.
75. For a description of his work from Vouzon to Sainte-Montaine, see Delambre, *Base*, 1, pp. 180-204. See also AOP E2-6, Delambre, 'Registre', pp. 336-61.
76. Delambre, *Base*, 1, pp. 203-6. See also AOP E2-6, Delambre, 'Registre', pp. 312-35.
77. Delambre to [Lavoisier?], quoted in Hélène Richard, 'Dans le cadre de la "meridienne verte"', *Bulletin de la Société Archéologique de Puiseux 29* (1999), p. 40.

78. For his accuracy in Sologne, see Delambre, *Grandeur*, p. 235.
79. For Delambre's request for information, see AOP MS1033C, Delambre to [Méchain], 13 fructidor III [3 September 1795].

Chapter 6 Fear of France

1. Johann Wolfgang von Goethe, *The Sorrows of Young Werther*, trans. Victor Lange (New York: Rinehart [1774], 1959), p. 53.
2. BUP MS168.1, Méchain to G. Slop, 14 June 1794. For prior contacts between Slop and the French, see BUP MS167.11, Lalande to G. Slop, 21 October 1792; see also BUP MS168.1, Dépôt de la Marine to G. Slop, 2 March 1778. Josepho Slopio de Cadenberg [G. Slop], *Theoriae cometarum* (Pisa: Pizzurnus, 1771).
3. BUP MS168.1, Branacci to G. Slop, 20 June 1794. For accounts of this period, see BUP MS168.1, Méchain to G. Slop, 21 June 1794; see also Oriani to Piazzi, 12 November 1794, in *Correspondenza astronomica fra Giuseppe Piazzi e Barnaba Oriani* (Milan: Hoepli, 1874), p. 31-2.
4. For the Slop family, see F. Menestrina, 'L'astronomo Giuseppe G. Slop e la sua famiglia', *Studi Trentini di scienze storiche* 26 (1947), pp. 3-24, 127-50.
5. BUP MS168.1, Méchain to G. Slop, 2 August 1794.
6. BUP MS168.1, Méchain to G. Slop, 4 October 1794. We can infer that Méchain told G. Slop all this because his subsequent letters assume G. Slop's prior knowledge, including knowledge of the Mont-Jouy results; see BUP MS168.1, Méchain to G. Slop [27 September 1794].
7. BUP MS168.1, Méchain to G. Slop, 4 October 1794. We can infer that Méchain swore G. Slop to silence based on his demand that G. Slop burn his letters and keep them secret. It is unlikely, however, that G. Slop burned any of the letters, since there are almost no breaks in the weekly correspondence.
8. For Méchain's arrival in Genoa, see BUP MS168.1, Méchain to G. Slop, 12 July 1794. Méchain was still lodged at the Albergo del Leon d'Oro on the Piazza de Scolopi in late October; see AOP B4-10, Oriani to Méchain, 22 October 1794.
9. On Genoa in the run-up to the Revolution, see Lalande, *Voyage en Italie*, 2nd edn (Paris: Desaint, 1786), 8, pp. 292-390; René Boudard, *Gènes et la France dans la deuxième moitié du XVIII^e siècle* (Paris: Mouton, 1962), pp. 77-80, 173-6; Pietro Nurra, 'Genova durante la rivoluzione francese: un conspiratore: il patrizio Luca Gentile', *Giornale storico della Liguria*, new series, 4 (1928), pp. 124-31.
10. On Napoleon's visit, see Napoleon, *Correspondance de Napoléon I* (Paris: Plon, 1858), 1, pp. 64-5, 61-4. Théodore Jung, *Bonaparte et son temps, 1769-1799* (Paris: Charpentier, 1883), 2, pp. 438-40; Pietro Nurra, 'La missione del Generale Bonaparte a Genova nel 1794', in *La Liguria nel Risorgimento* (Genoa: Dalla sede del Comitato, 1925); Ramsay Weston Phipps, *The Armies of the First French Republic* (London: Oxford University Press, 1931), 3, pp. 231-2.

11. BUP MS169.15, Tranchot to F. Slop, 16 August 1794. For Méchain's view of Robespierre's fall, see BUP MS168.1, Méchain to G. Slop, 9 August 1794.
12. BUP MS169.15, Tranchot to F. Slop, 25 October 1794.
13. BUP MS169.15, Tranchot to F. Slop, 11 October 1794.
14. BUP MS168.1, Méchain to G. Slop, 2 August 1794.
15. On Tranchot's frustration, see BUP MS169.15, Tranchot to F. Slop [November 1794].
16. BUP MS168.1, Méchain to G. Slop, 9 August 1794.
17. BUP MS168.1, Méchain to G. Slop, 2 August 1794.
18. BUP MS168.1, Méchain to G. Slop, 10 September 1794.
19. BUP MS168.1, Méchain to G. Slop, 25 August 1794.
20. BUP MS168.1, Méchain to G. Slop, 25 August 1794.
21. BUP MS168.1, Méchain to G. Slop, 20 September 1794.
22. BUP MS168.1, Méchain to G. Slop, 20 September 1794.
23. BUP MS168.1, Méchain to G. Slop [27 September 1794].
24. For Méchain's discussion of his appointment, see BUP MS168.1, Méchain to G. Slop, 4 October 1794. Méchain heard from Calon in SHAT 3M4, Calon to Méchain, 13 vendémiaire II [4 October 1794]. For further discussion, see BUP MS168.1, Méchain to G. Slop, 18 October 1794.
25. BUP MS168.1, Méchain to G. Slop, 18 October 1794.
26. BUP MS168.1, Méchain to G. Slop, 4 October 1794.
27. For Méchain's relay of the news from Lalande, see BUP MS168.1, Méchain to G. Slop, 4 October 1794. For Lalande's expectation that Méchain would soon return, see AAS 1J4, Lalande, 'Journal', pp. 69-70.
28. BUP MS168.1, Méchain to G. Slop, 18 October 1794.
29. BUP MS168.1, Méchain to G. Slop, 20 September 1794.
30. For Tranchot's preparations, see BUP MS169.15, Tranchot to F. Slop, 25 October 1794.
31. AOAB Cart. 88, Méchain to Oriani, 2 October 1794. On Oriani's trip to Paris in 1786, see A. Mandrino, G. Tagliaferri and P. Tucci, eds, *Un viaggio in Europa nel 1786: Diario di Barnaba Oriani* (Milan: Olschki, 1994), pp. 145, 147, 152, 154.
32. Boudard, *Gènes*, p. 308. AOP C6-6, Méchain, 'A Gènes sur la terrasse de l'hôtel du grand Cerf', 16 October 1794. Méchain was aware that Zach had observed from the same hotel terrace in 1787; see AOAB Cart. 88, Méchain to Oriani, 27 December 1794. Zach also visited Méchain while he was Italy; see BI MS2042 fol. 323, Delambre, 'Zach, Journal de Gotha' [1810].
33. AOP B4-10, Oriani to Méchain, 22 October 1794.
34. SHAT 3M4, Calon to Méchain, 13 pluviôse III [1 February 1795].
35. For Méchain's proposals for delay, including his pendulum experiment; see BUP MS168.1, Méchain to G. Slop, 2, 9, 16 August 1794. Méchain worried that the refraction project would be read as a 'pretext' for deferring his return to France; see AOAB Cart. 88, Méchain to Oriani, 5 November 1794.
36. BUP MS168.1, Méchain to F. Slop, 25 October 1794.

37. BUP MS168.1, Méchain to G. Slop, 22 November 1794.
38. AOAB Cart. 88, Méchain to Oriani, 20 November 1794.
39. BUP MS168.1, Méchain to G. Slop, 6 December 1794.
40. BUP MS168.1, Méchain to G. Slop, 17 January 1795.
41. BUP MS168.1, Méchain to G. Slop, 7 February 1795.
42. For a contemporary nosology of melancholy, see Philippe Pinel, *A Treatise on Insanity*, trans. D. D. Davis (Sheffield: Todd [1801], 1806), pp. 136-49, 222-34.
43. For Méchain's claim that one of his Paris colleagues – perhaps Lalande – had 'moved heaven and earth' to prevent him from getting the pendulum, see AOAB Cart. 88, Méchain to Oriani, 12 February 1795. For the sale of the circle, see AOAB Cart. 88, Méchain to Oriani, 12, 28 February, 5, 14 March, 2 April 1795.
44. On refraction, see AOAB Cart. 88, Méchain to Oriani, 27 December 1794; see also BUP MS168.1, Méchain to G. Slop [27 September 1794]. Méchain conducted these observations in the company of Francesco Pezzi, captain of the engineering corps and mathematics professor at the University of Genoa. Pezzi was also involved in anti-oligarchy politics. Nurra, 'Genova durante la rivoluzione', pp. 124-31. The Barcelona results were published as Méchain, 'Eclipses de soleil et occultations d'étoiles', *Ephemerides astronomicae anni 1795* (Milan: Galeatrium, 1794), pp. 81-3. Méchain discovered a typographical error in the published Mont-Jouy latitude, which should have read 41°21'45", not 41°21'25". See AOAB Cart. 88, Méchain to Oriani, 29 November 1794, 2 April 1795.
45. Esteveny left Genoa on 22 December 1794 and arrived in Paris on 25 January 1795; see AOAB Cart. 88, Méchain to Oriani, 27 December 1794; BUP MS168.1, Méchain to G. Slop, 17 January 1795; SHAT 3M5, Calon to Méchain, 13 pluviôse III [1 February 1795]; AN F12 1288, Ginguin, 'Rapport', 22 pluviôse III [10 February 1795].
46. AOAB Cart. 88, Tranchot to Oriani, 27 December 1794, 2 April 1795.
47. BUP MS169.15, Tranchot to F. Slop, 4 April 1794.
48. BUP MS168.1, Méchain to G. Slop, 4 October 1794.
49. SHAT 3M5, Calon to Méchain, 13 pluviôse III [1 February 1795].
50. BUP MS168.1, Méchain to G. Slop, 4 April 1795.
51. For Tranchot's tracking of the war, see BUP MS169.15, Tranchot to F. Slop, 8 November 1794, 21 February 1795, 24 ventôse 1795 [14 March 1795], 4 April 1795. Phipps, *Armies of the First French Republic*, 3, pp. 234-6.
52. Napoleon to Oriani, 5 prairial IV [24 May 1796], in Napoleon, *Correspondance*, 1, pp. 491-2. On Slop's son, see Menestrina, 'Slop'.
53. On the assumption that Méchain was coming north, see Delambre, *Base*, 1, p. 61.
54. BUP MS168.1, Méchain to G. Slop, 4 October 1794. On Calon's plans for Tranchot, see Berthaut, *Ingénieurs géographes*, p. 164.
55. AOP E2-19, Méchain to Lalande, 13 thermidor III [31 July 1795].
56. SHAT 3M4, Calon to Méchain, 28 thermidor III [15 August 1795]. For Méchain's complaints to Delambre, see AOP E2-19, Méchain to Delambre, 8 thermidor III [26 July 1795].

57. For Méchain's arrival in Perpignan, see BML, Méchain to Calon, 13 fructidor III [30 August 1795]. For the story of the carriage, see Delambre, *Grandeur*, p. 216.

Chapter 7 Convergence

1. William Blake, *Milton: Book the First*, in *The Portable Blake*, ed. Alfred Kazin (New York: Penguin Books, 1974), p. 433.
2. AOP E2-19, Méchain to Delambre, 8 thermidor III [26 July 1795].
3. AOP MS1033c, Delambre to [Méchain], 13 fructidor III [3 September 1795].
4. AOP E2-19, Méchain (Perpignan, Estagel) to Delambre, 12-23 vendémiaire IV [4-15 October 1795].
5. For Méchain's horror of publication, see Delambre, *Notice historique sur M. Méchain*, p. 30.
6. AOP E2-19, Delambre to Méchain, 12 frimaire IV [3 December 1795].
7. AOP E2-19, Delambre to Méchain, 12 frimaire IV [3 December 1795].
8. AOP E2-19, Delambre to Méchain, 12 frimaire IV [3 December 1795].
9. On Delambre's passage through Paris, see AAS 1J4, Lalande, 'Journal' (22 frimaire IV [13 December 1795]), p. 73; see also, AN F17 3702, Delambre to Min. Int., 28 frimaire IV [19 December 1795]. On the Academy elections, see *PVCIP*, 6, pp. 832-6. Méchain was appointed to the astronomy section, along with Lalande, in the first round, but only after some backroom jockeying; the four other places in astronomy, elected in a second round of voting by those appointed in the first round, were taken by Le Monnier, Pingré, Messier and Cassini IV. This meant that Delambre was elected to the mathematics section in the second round, though by his own admission this was not the appropriate section for him. See Delambre, 'Lui-même'.
10. CUS, Lalande to Delambre, 2 pluviôse IV [22 January 1796].
11. For Delambre's observations at Dunkerque, see Delambre, *Base*, 2, pp. 249-96. AOP E2-16, Delambre, 'Registre: Méridien de France, Partie du nord', vol. 2. AOP MS1033c, Delambre, 'Hauteur du pôle à Dunkerque', [1795-6]. Delambre to [Janvier?], 2 pluviôse IV [22 January 1796], in Adolphe Desboves, *Delambre et l'arpente* (Amiens: Hequet, 1881), pp. 32-3.
12. Delambre, *Grandeur*, pp. 239-40.
13. Delambre, *Grandeur*, p. 279.
14. AOP MS1033c, Delambre to Méchain, 17 fructidor III [3 September 1795].
15. AOP E2-1, Delambre, 'Reprise des opérations', 9 fructidor III [26 August 1795].
16. AOP E2-19, Méchain to Delambre, 12 floréal IV [1 May 1796]. Méchain asked Lalande about Delambre's observations in March, especially for his data on other stars; see AOP E2-19, Méchain to Lalande, 11 ventôse IV [1 March 1796].
17. AOP E2-19, Delambre to Méchain, floréal IV [mid-May 1796]. In this letter, Delambre admits to having received Méchain's letter of 12 floréal IV [1 May 1796].
18. AOP E2-19, Delambre to Méchain, floréal IV [mid-May 1796].
19. SHAT 3M4, Calon to Méchain, 26 thermidor III [13 August 1795]. For costs, see AOP E2-19, Méchain to Delambre, 12-23 vendémiaire IV [4-15 October 1795].
20. AOP E2-19, Méchain to Lalande, 1 ventôse IV [1 March 1796]. On the delicate subject of Tranchot's pay, see SHAT 3M4, Calon to Méchain, 9 nivôse IV [30 December 1795]. On the inflated salaries, see BL, 'Procès-verbaux', 22 pluviôse IV [11 February 1796].
21. BML, Méchain to Calon, 13 fructidor III [30 August 1795].
22. Méchain got rid of Décuve first, and Bouvet that winter; see BA MS P2100, Méchain to Calon, 5 ventôse IV [24 February 1796].
23. For Forcerai, see AOP E2-19, Méchain to Delambre, 12-23 vendémiaire IV [4-15 October 1795].
24. AOP E2-19, Méchain to Lalande, 3 brumaire IV [25 October 1795].
25. Gaston Jourdanne, *Contribution au folk-lore de l'Aude* (Paris: Maisonneuve, 1973), p. 28; for *sinagrie*, see p. 22. On modern local folklore, see ADAU D²2441, Roger Antoni, *Rennes-le-château ou la mystification biblique* (Montreal: Chez l'auteur, n.d.).
26. This description of typical French inns of the region and time comes from Young, *Travels*, 1, pp. 40-50. Original quote reads 'ridus' instead of 'nest'.
27. On mountain travel in the region in this period, see Serge Biffaud, *Naissance d'un paysage: La montagne pyrénéenne à la croisée des regards, XVIIe-XIXe siècle* (Tarbes: Mauraun, 1994).
28. For Alaric and Tauch, see AOP E2-19, Méchain to Lalande, 1 ventôse IV [1 March 1796].
29. For the preparations for the Perpignan baseline, see AOP E2-19, Méchain to Lalande, 1 frimaire IV [22 November 1795], 28 prairial IV [16 June 1796]. For permission to have the army engineers build the pyramids, see SHAT 3M4, Calon to Méchain, 26 messidor IV [14 July 1796]; 3M5, Calon to Méchain, 5 thermidor IV [23 July 1796]. Nor would his colleagues let Méchain conduct the pendulum measurements, as he still wished to do; see SHAT 3M4, Calon to Méchain, 28 fructidor III [14 September 1795]. On Tranchot's use of the chain and his role in setting up the pyramid markers, see AOP E2-19, Méchain to Delambre, 9 germinal VI [29 March 1798].
30. AOP E2-19, Méchain to Lalande, 1 ventôse IV [1 March 1796].
31. AOP E2-19, Méchain to Lalande, 12 floréal IV [1 May 1796].
32. For Méchain's plea to do extra work, see AOP E2-19, Méchain to Delambre, 21 frimaire V [11 December 1796].
33. On the intermediate latitudes, see AOP E2-19, Delambre to Méchain, 8 fructidor IV [25 August 1796]. AOP E2-19, Borda to Méchain, 14 messidor IV [2 July 1796].
34. AOP E2-19, Méchain to Delambre, 3 ventôse V [21 February 1797].
35. AOP E2-19, Borda to Méchain, 14 messidor IV [2 July 1796].
36. AOP E2-19, Borda to Méchain, 12 frimaire V [2 December 1797].
37. AOP E2-19, Delambre to Méchain, 17 floréal V [6 May 1797]. See also AOP E2-19, Delambre to Méchain, 5 nivôse V [25 December 1796].