

The 1753 *Carte chronographique* of Jacques Barbeu-Dubourg

BY STEPHEN FERGUSON¹

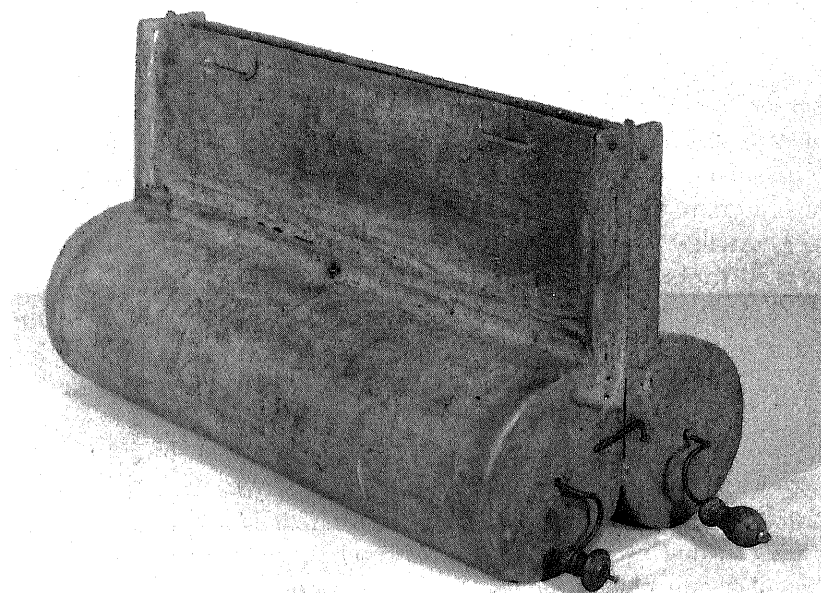
In the third volume of the *Encyclopédie*, following subjects such as “Chapeau,” “Charlatan (médecine),” and “Chorégraphie,” there is an unusual article written by Diderot: “Chronologique (Machine).”² Obviously the machine was not a clock, else it would be in a later volume, under “Horologe.” In the following pages Diderot writes an enthusiastic and detailed verbal description of the “machine,” listing its essential parts, telling how it is constructed, and informing his readers about its utility. He reveals the name of the inventor — Jacques Barbeu-Dubourg, a Parisian doctor and friend of Benjamin Franklin — saying that the maker is offering a free device to those who will correct any errors or make suggestions for revision. Diderot also refers to the illustrative plate showing the parts that he is describing verbally. The *Encyclopédie* has eleven volumes of plates, but the “chronology machine” is not among them; according to authorities on the publishing history of the *Encyclopédie*, the plate was never published.³ The verbal description is all there is, and it is difficult to pic-

¹ I wish to acknowledge the help of the following with this study: Agnes Sherman (Princeton University Library), Bruce McKittrick (Philadelphia), Walter Goffart (University of Toronto), John Logan (Princeton University Library), Ann Blair (Princeton University), William Stoneman (Scheide Library), Anna Creese (Princeton University), and H. Richter (Hagley Library).

² For a transcription and translation of the article by Diderot, see the appendix to this article.

³ The complicated story of the planning, design, production, and distribution of the plates for the *Encyclopédie* is told by Richard Schwab in his *Inventory of Diderot's Encyclopédie*, vol. 223 of *Studies in Voltaire and the Eighteenth Century* (Oxford: Voltaire Foundation, 1984); Vol. 7: *Inventory of the Plates*, pp. 9–20. Schwab (p. 264) confirms that the plate for the article “Chronologique (Machine)” was never published. The drawing illustrating the appendix to this article shows the machine and its parts labeled according to the text as given by Diderot. It was prepared by the author with the help of Brad Gianulis, using graphics computer equipment in the Princeton University CIT Computer Graphics Laboratory.

The *Inventory* reveals that in volume three of the *Encyclopédie*, the reader is referred



Jacques Barbeu-Dubourg's *Machine chronologique*, folded, closed, and latched. The rolled chart sits inside the scroll-like lower section. Rare Books and Special Collections, Princeton University Library.

ture the invention in the mind's eye. What exactly was this “chronology machine” that Diderot was so excited about?

Late in 1988, the Princeton University Library acquired one of Dubourg's “chronology machines.” It is just as Diderot described it: a time-line, 54 feet long, engraved on a continuous paper scroll the whole of which is enclosed in its own housing that serves when closed as protection for the scroll, and when open as a stage for easy viewing of the time-line. The “machine” has small wooden handles by which the scroll is rolled either to the left (towards the present) or right (towards the past). As Diderot states, the reader is presented with 140 years of world history laid out at once upon the viewing stage. Running horizontally across the top of the scroll there is a distinct, long,

to a plate in 204 instances. In 25 percent of those instances, the reader cannot easily find the plate, either because the plate was not published, or because the text and the plates do not match, or because the reference to the plate is not specific enough.

thin line. This line represents time from Creation to Dubourg's era, with the years marked off vertically in small, equal, one-year increments.⁴ Below the time-line, Dubourg has laid out his record of world history. Here are the names of kings, queens, assassins, sages, and many others, as well as short phrases summarizing events of consequence. All are fixed in their correct place in time and grouped either in their country of origin or in Dubourg's final, general category at the bottom of the chart, "événements mémorables."

The earliest printed reference to the *Carte chronographique* found so far is the approbation, dated 2 May 1752, signed by "Barthelemy"⁵ and included in the explanatory pamphlet issued together with the machine by Dubourg in 1753.⁶ Next is the printed privilege at the front of the *Carte*, dated 28 May 1753, signed by the secretary to the King's Council, and registered in the *Registre treize de la Chambre Royale des Librairies & Imprimeurs de Paris* on 3 June 1753. Here the *Carte* is recorded under the title *Chronographie universelle & details qui en dependent pour la chronologie & les généalogies*. It is a "privilege d'auteur," granting M. Dubourg⁷ exclusive claim to the work for nine years and assuring his monopoly over its publication. As with other such privileges, Dubourg was instructed to deposit copies of the *Carte* in various places, including the "Bibliothèque publique." Today, the Bibliothèque Nationale in Paris owns a copy of the *Carte*, but records it under a different title and as a bound volume of plates, not a scroll. In 1883 an example of the machine was purchased by the municipal

⁴ One year equals .1 inch (English).

⁵ Probably this Barthelemy was the official censor, an officer who worked by order of the chancellor.

⁶ *Chronographie; ou, Description des tems, contenant toute la suite des souverains de l'Univers, & des principaux événemens de chaque siècle, depuis la Création du Monde jusqu'à présent; en trente-cinq planches gravées en Taille-douce, & réunies en une Machine d'un usage facile & commode, par M. Barbeu Dubourg, Docteur en Médecine & Professeur de Pharmacie en l'Université de Paris* (Paris, 1753), p. 12.

⁷ Biographic information about Dubourg may be found in Louis Petét de Bachaumont, *Mémoires secrets*, 33 vols. (London: J. Adamson, 1780); Vol. 14, p. 369; Vicq d'Azyr, "Eulogy," in *Oeuvres*, 4 vols. (Paris: L. DuPrat-Du Verger, 1805); Vol. 2, pp. 181-196; the obituary in *Journal de Paris*, 29 December 1779; Paul Delaunay, "Vieux médecins mayennais: Barbeu du Bourg," *Bulletin de la Commission historique et archéologique de la Mayenne*, 2nd ser. (Laval, 1903), Vol. 19, pp. 15-89; A. O. Aldridge, "Jacques Barbeu-Dubourg, A French Disciple of Benjamin Franklin," *Proceedings of the American Philosophical Society* (Philadelphia), Vol. 95 (1951), pp. 331-392; and historian and editor Lyman Butterfield's succinct note in his *Letters of Benjamin Rush*, 2 vols. (Princeton: Princeton University Press, 1951), Vol. 1, p. 77. See also the standard biographical dictionaries, such as the *Dictionnaire de Biographie Française*, for articles on Dubourg.

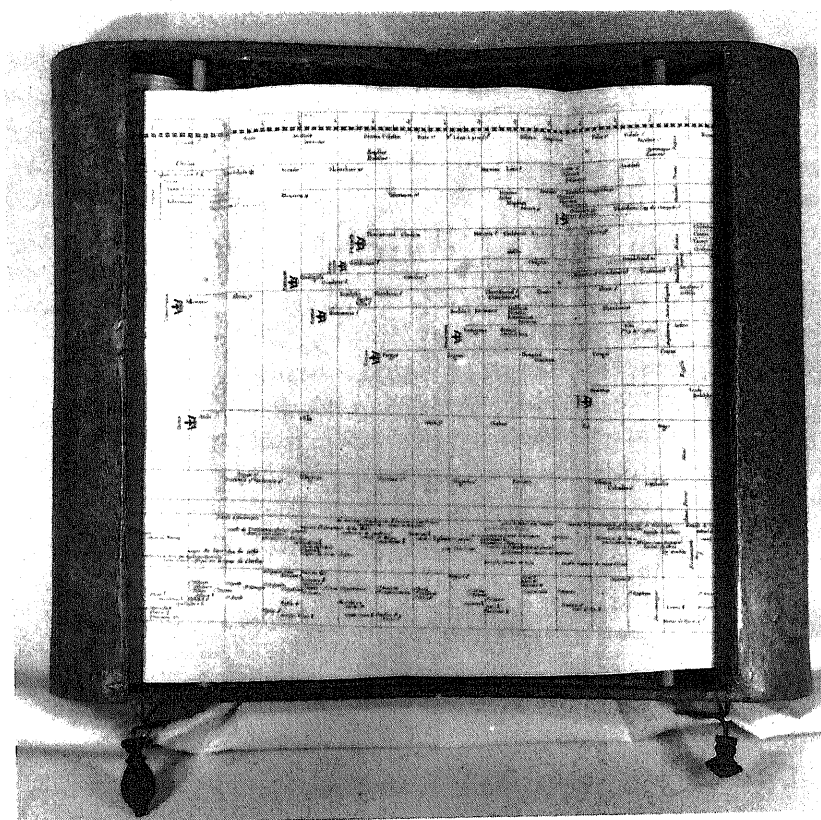


Photo: Don Breza

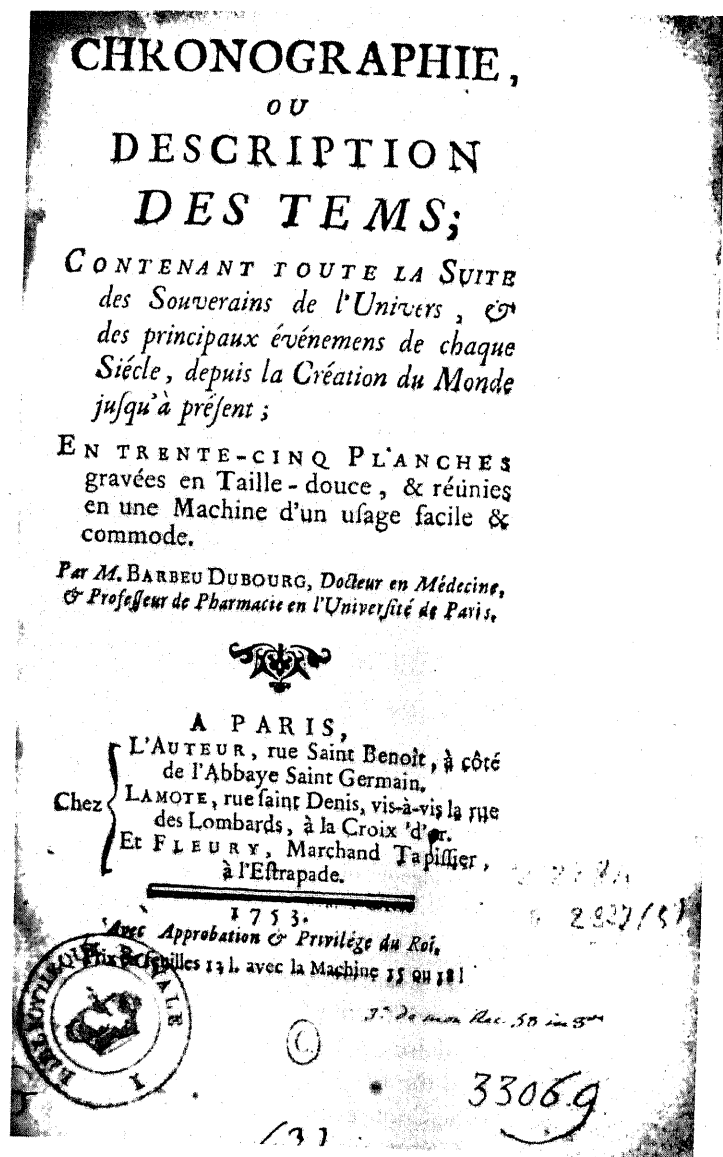
Jacques Barbeu-Dubourg's *Machine chronologique*, opened to the years A.D. 360 to A.D. 510 on the *Carte chronographique*, showing the kingdoms of the Huns, Sweden, Scotland, England, Swabia, the Visigoths, the Vandals, Bourgogne, France, and Italy. Rare Books and Special Collections, Princeton University Library.

library in Laval from the *Commission historique et archéologique de la Mayenne*, which had received it from Emile Moreau, one of the Commission's "Membres Titulaires."⁸ In 1903, Paul Delaunay examined, measured, and illustrated the machine for his biographical article on Dubourg published in the Commission's *Bulletin*.⁹

According to the catalogue published by the Bibliothèque, Dubourg issued an explanatory sixteen-page octavo pamphlet to accom-

⁸ Commission Historique et Archéologique de la Mayenne, *Procès-Verbaux et Documents* (Laval, 1884), Vol. 3, pp. 73-74.

⁹ Delaunay, "Vieux médecins mayennais," pp. 24-25.



Title page of the explanatory pamphlet issued with Jacques Barbeau-Dubourg's *Carte chronographique*. Paris, 1753. Rare Books and Special Collections, Princeton University Library.

pany the *Carte*. The imprint of the pamphlet shows that the *Carte* had been issued in two different formats at two different prices: in sheets for 12 livres, or "with the machine" for 15 or 18 livres.¹⁰ In the latter case, of course, the sheets were glued together to form a scroll.

The explanatory pamphlet is divided into three major parts: *Discours préliminaire*, *Advertissement*, and an engraved *Explication des Signes employées*.¹¹ In the preliminary discourse Dubourg discusses a number of points, beginning with a consideration of the nature of history:

The taste for history is natural to all men and its utility is perhaps the one thing in the world which indeed has been the least denied. In effect, what is history? It is the totality of all that the eyes have seen, that the ears have heard. It is an enchanted school, where one is taught at the expense of its masters; where one censures others without compromising oneself; where one learns all at once how to judge the past, to discern the present, to foresee the future; where one bases his experience on that of all time, of all nations, of all ages, and of all ways of life; and finally where, as reason is developed and the mind is opened to the truth, so manners are refined, and the heart linked firmly to virtue. That is history in general. But this vast field demands some cultivation — and because it has not received it equally in all its parts, one must not be amazed that its product differs so greatly. Here you see charming flowers, there delicious fruits, elsewhere tares are mixed with wheat and farther away is dry and untilled land. Even if this very variety may rightly please many people, it is none the less true that the difference between right and wrong soon makes itself felt — so the common folk understand it sooner or later; the wise never mistake it.¹²

¹⁰ Also in 1753 Dubourg issued what is today called a "rarity," his three-page octavo *Sommaire de chronologie en vers techniques*, as mentioned in DBF (1949) and as stated by Delauny, "Vieux médecins mayennais," p. 87: "Attribué à Barbeau par Desportes dans sa Bibliographie du Maine (Le Mans, 1844)."

¹¹ Pages 3–12, 13–16, and 17–18 respectively.

¹² Le goût de l'Histoire est naturel à tous les hommes, & son utilité est peut-être la chose du monde qui a le moins été contestée. En effet qu'est-ce que l'Histoire? C'est le Recueil de tout ce que les yeux ont vû, de tout ce que les oreilles ont entendu; c'est une Ecole enchantée, où l'on s'instruit aux dépens de ses Maîtres, où l'on censure les

Dubourg declares that the two ancillary fields to history ("eyes," he calls them) are geography and chronology. He notes the advanced development of geography as a means of studying history, calling it "lively, convenient, attractive."¹³ By comparison, chronology is a subject "dry, laborious, unprofitable, offering the spirit a welter of repulsive dates, a prodigious multitude of numbers which burden the memory."¹⁴ Clearly, Dubourg wants to right this imbalance between geography and chronology. He wants to modernize chronology, to make it as lively and accessible as geography. Setting out human events on the time scale is identical in his mind to mapping the earth against a rational, formal, and impersonal grid, as a geographer would do.¹⁵

To summarize his geographical approach to chronology, Dubourg uses the word *chronographie*, a compound word derived from *chronos* (time) and *graphein* (to write), just as "geography" is derived from *geos* (earth) and *graphein* (to write).¹⁶ Dubourg's *chronographie* is intended to be a science that, like geography, speaks to the eyes and the imagination, "a picture moving and animated."¹⁷ And although there are acknowledged problems with correctly establishing dates for an-

autres sans se compromettre, où l'on apprend tout à la fois à juger le passé, à discerner le présent, & à prévoir l'avenir, où l'on fonde son expérience sur celle de tous les temps, de tous les pays, de tous les âges & de tous les états de la vie, enfin où à mesure que la raison se développe & que l'esprit s'ouvre à la vérité, les mœurs s'adoucissent & le cœur s'attache solidement à la vertu.

Voilà ce qu'est l'histoire en général; mais ce vaste Champ demande quelque culture, & comme il n'a pas reçu la même dans toutes ses parties, on ne doit pas être étonné que ses productions soient si différentes. Ici vous voyez des fleurs charmantes, là des fruits délicieux, ailleurs l'yvrage est confondue avec le froment, & plus loin ce n'est qu'un sol aride & inculte. Si cette variété même a droit de plaire à beaucoup de gens, il n'en est pas moins vrai que la différence du bon & du mauvais se fait bientôt sentir à tout le monde, le Vulgaire même la saisit tôt ou tard, & le Sage ne s'y méprend jamais. *Chronographie*, p. 3; translated by Agnes Sherman and SF, with revisions by John Logan.

¹³ *Chronographie*, p. 5.

¹⁴ Ibid.

¹⁵ Ptolemy certainly endeavored to show the world projected in that manner, but his work was overturned by Mercator, who in 1569 first showed the continents and seas laid out over a grid made by parallel vertical lines (meridians) and parallel horizontal lines (latitudes).

¹⁶ *Chronographie*, p. 8. "Chronographie" appears to be a word current at the time, but not widely used. The term is used in the 1682 eight-page pamphlet by Nicolas Catherinot (1628–1688) entitled *La chronographie de Berry. Par le S. Catherinot*. The term is defined in the 1771 edition of the *Dictionnaire de Trévoux*; it is evidently linked to the word "chronographus," the Latin term meaning those who write chronology, such as Pierre Petau.

¹⁷ *Chronographie*, p. 8.

cient events, and although there were quarrels about the veracity of various sources, these difficulties are not to interfere with the larger purpose: to nurture man's natural taste for history.¹⁸ Furthermore, Dubourg shows that he considered the study of history to be directly connected to the acquisition of virtue. His apparatus, then, is meant to aid in the wider, larger, and nobler endeavor undertaken by the *philosophes*.¹⁹

All of Dubourg's ideas about history are in harmony with those of the Encyclopedists. Like Dubourg, they thought that history was a body of useful knowledge (or a science) that served as a guide for action.²⁰ Dubourg's emphasis on people — the *Carte* displays a great deal of biographical information — demonstrates his belief that history is learned through the study of individuals.²¹ Finally, his notion that the "eyes" of history are chronology and geography is echoed by the Encyclopedists.²²

In the second major part of the accompanying pamphlet, *Advertissement*, Dubourg tells us that nothing could be easier than using his time-line. "Are you reading a book of history?" Then to see at a

¹⁸ See, for example, the opening sentence of the "Discours," *Chronographie*, p. 3.

¹⁹ Robert Darnton, in a chapter entitled "Philosophers Trim the Tree of Knowledge," in his *Great Cat Massacre and Other Episodes in French Cultural History* (New York: Basic Books, 1984), p. 194, points out that "Mappemonde" was a crucial metaphor used by the *philosophes* to describe their work. As evidence he gives, on p. 195, a long quotation by d'Alembert about the similarity of the *Encyclopédie* to a world map.

²⁰ See Lefebvre in his article in the *Encyclopédie*, Vol. 7, 796b: "Gouverneur d'un jeune homme." He says that in history the student will see "the mixture of greatness and narrowness, of courage and weakness, of enlightenment and ignorance, of wisdom and folly of which [mankind] is capable." Furthermore, Virtue succeeds, "and during the whole succession of centuries, enthroned on the ruins of empires, it receives the homage of the universe." See also Voltaire in his article "Histoire" (Vol. 8, 225b): "If you have nothing else to say but that one barbarian succeeded another barbarian on the banks of the Oxus and the Taxisartes, what is your public usefulness?" and "Eléments des Sciences" (Vol. 5, 425b), where the author insists that the study of the moral universe is just as important to wise men as the study of the physical universe, and equally all-inclusive; also, d'Alembert in "Discours préliminaire": "[T]he origin of the study of history, which uniting us with past centuries, presents the spectacle of their vices and virtues, their wisdom and their faults, and hands down ours to the centuries that follow."

²¹ See d'Alembert's article, "Discours," in the *Encyclopédie*: "The history of science is naturally bound up with that small number of great geniuses." Also note that d'Alembert in "Eléments des sciences" (Vol. 5, 491) says that "most of the sciences were invented little by little; a few men of genius discovered, at different intervals of time, a certain number of truths." See also Diderot, "Jesus Christ" (Vol. 15, 300): "It needs but one man and less than a century to besot a nation; it needs a multitude of men and the work of many centuries to arouse it again."

²² See d'Alembert, "Discours," "Chronologie" (Vol. 3, 391a), and "Géographie" (Vol. 7, 608b and 613b).

glance world events covered by the book, just roll the *Carte* to the relevant years and there it is!²³ "Do you want to travel over the length and breath of the time-line?"²⁴ Just roll back to Adam and proceed forward to the present day.

In the third major part of the accompanying pamphlet there are two pages of symbols constituting one of the most interesting aspects of Dubourg's *Carte*.²⁵ The symbols serve as annotations to the names recorded in the section of the chart labelled "Personages." Dubourg's annotations are an assembly of both character-types (martyr, usurper, tyrant, just, bigot, cruel, debaucher, slothful, fool, noble, majestic, blessed, heretic, impious, upright, unfortunate, rebel) and "professions" (savant, painter, theologian, botanist, medical doctor, musician, monk, soldier, astronomer). The annotations declare Dubourg's teaching agenda: the study of history is intended to lead the student to virtue. The symbols give Dubourg's answer to the question, "What sort of person was King so-and-so?" Underlying his annotations is the grand tradition of moralistic emblems, devices, and *impressa*. Dubourg's mix is exactly like that of one of the most popular handbooks of personified abstractions of his time, Cesare Ripa's *Iconologia*, a dictionary of "various images of virtues, vices, passions, arts, humours, elements, and celestial bodies."²⁶ Although Ripa's book was first published in 1593, it was regularly translated and re-published until the end of the eighteenth century, and could well have been available to Dubourg.

Part of the appeal of the symbols themselves is the feat of wit required not only to link them to Dubourg's set of meanings but to decipher their origins in other traditions of learning that use symbols: astrology, alchemy, emblems, chemistry, astronomy, almanacs, or Christianity. Astrology and astronomy supply him with his symbols for blessed (sun, golden), restored (Saturn, who was returned to power), ministers and statesmen (Jupiter, the power of organization), and so on. He draws from Christianity the bishop's staff (bishop), wheel of St. Catherine (martyr), among others. From pharmacy he takes the sign for scruple. He also draws on the traditions of alchemy and chemistry, not only borrowing the symbols themselves, but also

²³ *Chronographie*, p. 13.

²⁴ *Ibid.*

²⁵ See the appendix on symbols, at the end of this article.

²⁶ Cesare Ripa, *Iconologia*; or, Moral Emblems. . . . (London: B. Motte, 1709).

using the grammar of chemical symbols in which one basic symbol was modified with certain strokes to denote, for example, "precipitate," or "sublimate." Thus he uses the alchemical sign for arsenic with modifications to mean rebel, heretic, errant, and schismatic. (A full listing of all symbols used, their equivalence in Dubourg's scheme, as well as comments about the originating tradition for the symbol are given in the appendix.)



What did Dubourg's contemporaries think of the *Carte chronographique*? We have already mentioned Diderot's lavish description of the chronology machine in the *Encyclopédie*. Dubourg's *Carte* was also described and commented upon in the *Mercure de France* (December 1753 and March 1754), the *Journal de Trévoux* (August 1753), and the *Journal des sçavans* (Amsterdam edition, October 1753). These reviews shed light on a number of interesting aspects of the *Carte*.

In general, contemporary reviews praised Dubourg's effort, lauding it for its ingenuity. The *Mercure de France* recommended it to parents for the instruction of children and to schoolmasters for their pupils. Although the Jesuit *Journal de Trévoux* gave it a mixed review, in the end it was deemed "very estimable."²⁷ The *Journal* objected to a feature of the *Carte* that Dubourg knew would be controversial: his

²⁷ In August 1753, the *Journal de Trévoux* carried a three-page notice of the *Carte chronographique*: "On nous donne ici deux choses, 1°. Une Chronographie entière en trente-cinq planches ajustées dans deux tambours de carton, & se déployant sur elles-mêmes, au moyen des deux manivelles, dont le jeu est très-facile. 2°. Un Mémoire très-court, destiné à l'explication de cette Chronographie, ou plutôt de la Mécanique qu'on y a suivie. Car nous ne regardons pas cet Ecrit comme quelque chose de relatif à l'importance des Matières que présentent les Planches gravées. L'Auteur eût rendu service au Public, s'il se fût donné la peine de composer un juste Volume, pour rendre raison des points les plus importants, compris dans toute la suite des Siècles qu'il nous expose. Ainsi, par exemple, il auroit dû nous dire qu'il adopte la Chronologie, non de l'Hébreu ordinaire, non des Septante, ni même du Samaritain pur, mais plutôt de l'Historien Joseph; car nous trouvons que, selon les calculs de cet Auteur, il doit y avoir environ 4658. ans avant l'Ere Chrétienne; & M. Dubourg en compte 4700. savoir 3947 depuis la création jusqu'à la fondation de Rome, & 753. depuis cette Epoque jusqu'à Jesus-Christ. Nous ne blâmons point cette idée de Chronologie; nous voudrions seulement qu'on l'eût annoncée, & justifiée du moins en peu de mots.

Mais si nous n'approuvons pas le laconisme du Memoire, qui n'est ici que la partie accidentelle, nous rendons bien justice à l'Ouvrage principal; c'est-à-dire, aux trente-cinq Planches gravées, & à l'ordre dans lequel on nous les développe. Ceci est une

EXPLICATION des Signes employés

Amiral.....	Y
Anatomiste.....	A
Artiste.....	F
Assassin, Assassiné.....	A, f
Astronome.....	☉
Belliqueux.....	♂
Botaniste, Naturaliste.....	☿
Chymiste.....	⚗
Collegues, Associés.....	X
Conquerant.....	✠
Cruel.....	♂
Débauché.....	V
Déposé, Chassé, Retiré.....	☉, ☿, ☿
Evêque.....	P
Empoisonneur Empoisonné.....	☿, A
Fainéant.....	☉
Femme.....	☿
Fou, Inconstant.....	☿, ☿
Generux, bienfaisant.....	♥
Géographe.....	^
Géometre.....	⊙
Grand.....	☼
Heretique, Errant, Schismatique.....	☿, ☿, ☿
Haineux.....	☉
Historien, Chronologiste.....	☿, ☿
Impie, Idolatre.....	T, ♀
Imposteur, faux Prophete.....	P, ☿
Interregne.....	○
Incertain.....	✠
Jurisconsulte.....	□
Juste.....	☿
Legislateur.....	☿

Photo: Don Breza

Key to the signs and symbols used in Jacques Barbeu-Dubourg's *Carte chronographique*, published in the explanatory pamphlet of 1753. Rare Books and Special Collections, Princeton University Library.

dans la Carte Chronographique,

Ligne de vie.....	-----
Malheureux.....	☿
Martyr.....	☿
Mechant, Injuste.....	M
Medecin.....	☿
Ministre.....	4
Moine.....	☿
Muricain.....	☿, ☿
Orateur, Rhetor.....	☿
Peintre.....	☿
Philosophe, Sage.....	☿, ☿
Pilote, Marin.....	☿
Poëte.....	☿
Prisonnier.....	☿
Prophete.....	☿
Prudent, Rusé.....	☿, ☿
Puni, mis à mort.....	☿, ☿
Rebelle.....	☿
Retabli, Rappelé.....	☿
Riche, Avarice.....	☿, ☿
Roy, Empereur.....	☿
Royaume.....	☿
Republique.....	☿
Ruine.....	☿
Saint.....	☿
Savant.....	☿
Souverain pontife.....	☿
Suicide, homicide de soi même.....	☿
Scrupuleux, Superstitieux.....	☿
Souveraineté.....	☿
Théologien.....	☿
Tué à la guerre.....	☿
Usurpateur, Tyran.....	☿

Photo: Don Breza

Key (continued) to the signs and symbols used in Jacques Barbeu-Dubourg's *Carte chronographique*, published in the explanatory pamphlet of 1753. Rare Books and Special Collections, Princeton University Library.

periodization of all history into three epochs.²⁸ Dubourg's scheme is just as Diderot describes it: "the first from the creation of the earth up to the foundation of Rome; the second from the foundation of Rome up to the birth of Christ; the third from the birth of Christ to our time." Although Dubourg's three epochs were commonplace ideas for his day, controversy swirled around the number of years assignable to the first two: Creation to Rome, and Rome to Christ. Of the three journals examined, however, only the Jesuit *Journal de Trévoux* took issue with Dubourg's count of years for the first epoch.

The next notice of the chronology machine is found in a letter dated 8 May 1768, the earliest surviving correspondence between Dubourg and Benjamin Franklin, who were firm friends for nearly twenty-five years. It is clear from the letter that Franklin had heard of Dubourg's *Carte*, and had asked for information about it. Dubourg wrote in reply:

I have the honor of sending to you the attached short explication of my chronographical chart which you have the goodness to ask of me. To make such an exchange with you is to exchange arms of bronze for arms of gold — for thus did Diomedes exchange with Glaucus — and I am embarrassed over my role because the advantage was all on the hero's side in the ancient example — and it is here the contrary. I have received with gratitude and viewed with pleasure the biographical chart of Mr. Priestley²⁹ which is in effect made according to almost the same principles as mine — (indeed) without plagiarism on either

invention aussi utile qu'ingénieuse. Quelques soins pour remplir les premiers Siècles, au moins en faisant usage des conjectures; pour orner la colonne où l'on annonce l'Empire de la Chine; pour donner à chaque Prince ou Personnage illustre le caractère, la marque distinctive qui lui convient; pour porter, sur les marges des Planches quelques traits d'explication convenables aux époques & aux faits les plus remarquables; en un mot quelques efforts encore dans l'Auteur, feront de cette Chronographie une pièce que tout le monde voudra se procurer. Elle est très-estimable dans l'état où l'on nous la donne actuellement. . . . See also Cyril B. O'Keefe, *Contemporary Reactions to the Enlightenment, 1728–1762* (Geneva: Slatkine, 1974), pp. 6–9.

²⁸ *Chronographie*, p. 10.

²⁹ Joseph Priestley's *New Chart of Biography* was issued in 1765 (ESTC T012328) and explained in his pamphlet, *A Description of a Chart of Biography*. A related effort was his *A New Chart of History . . . [dedicated] to Benjamin Franklin, LL.D., F.R.S. . . .* Published at London, April 11, 1769. Drawn by Pullman and engraved by Butterworth, Leeds. There is a copy in the Maps Division of the British Library and one in the Newberry Library, Chicago. Several editions of the chart were printed.

part, because I do not intend to pride myself on the (earlier) date of mine.³⁰

Then, in 1777, Diderot's article "Chronologique (Machine)" appeared in the Geneva quarto of the *Encyclopédie*. The article is truncated, however, giving only a general notion of the *Carte* and naming Dubourg as author.

In 1779 Dubourg died. His contemporary eulogists, Félix Vicq d'Azyr³¹ and Dr. Lettsom, each knew of Dubourg's *Carte* and remarked on it. Lettsom's comments are most interesting:

Two sciences, Geography and Chronology, have been the result of these researches, and it is upon these that the knowledge of history is founded. . . . The second [science] traces and adjusts the succession of events; less compounded than Geography, the objects of which it treats, like time, have but one dimension, that of their duration. Chronology hitherto had not been reduced on tables; Dubourg had the merit of conceiving this arduous design in thirty-five plates,³² which placed together, and rolled upon two cylinders, imitated the revolution of centuries, and composed a chronological table, extending to the year 1753, when our author wrote.³³

³⁰ J'ai l'honneur de vous adresser cyjointe la petite explication que vous avez la bonté de me demander de ma carte chronographique, c'est changer des armes du cuivre contre des armes d'or que de trouer ainsi avec vous, c'est faire comme fit Diomede avec Glaucus, et je rougis de mon rôle, car l'avantage étoit tout du côté du héros dans l'ancien exemple, et c'est icy le contraire. J'ai reçu avec reconnaissance et vu avec plaisir la carte biographique de M. Priestley qui est effectivement contruite presque sur les mêmes principes que le mienne, sans plagiat de part ni d'autre, car je ne prétends point me prevaloir de la date. Leonard W. Larabee, ed., *The Papers of Benjamin Franklin*, 27 vols. (New Haven: Yale University Press, 1959–1988), Vol. 15, pp. 112–115. Translation revised by John Logan.

³¹ According to Robert Darnton, Félix Vicq d'Azyr was "perpetual secretary of the Société royale de médecine." "[He] made the Society into a great center for public health and, with the help of Turgot, had aligned medicine with service to the state. As doctor to the Compt d'Artois and later to the queen — Marie Antoinette reportedly called him mon philosophe — he became something of a courtier and an empire-builder." Darnton, *The Business of the Enlightenment: A Publishing History of the Encyclopédie* (Cambridge, Massachusetts: Harvard University Press, 1979), p. 431. Vicq d'Azyr is also the subject of an article in the *Dictionary of Scientific Biography*, Vol. 14, pp. 14–17.

³² At this point the Lettsom text has a footnote lettered "d": "These were preceded by an explanatory discourse. Tables have been since formed in England by Dr. Priestley, Dr. Blair, and Dr. Playfair."

³³ J. C. Lettsom, *Memoirs of the Medical Society of London* (London, 1787), pp. 481–482.

Did the favorable reviews for Dubourg's invention translate into sales? In his explanatory pamphlet, Dubourg states that the price of the *Carte chronographique* is 12 livres in sheets and 15 or 18 livres with the machine.³⁴ Exactly what the two prices for the apparatus entailed is not completely known; however, the prices can be compared to those for various maps published at about the same time and listed in various journals such as the *Mercure de France* or the *Journal des sçavans*.³⁵ In addition, M. S. Pedley, in her article on the 1757 *Atlas universel* of the de Vaugondys, gives the average price for a sheet map of this period as "two or three livres per sheet."³⁶ In contrast, the *Atlas Universel* cost "about one livre per sheet." Dubourg's price was about one-third livre per sheet, considerably less than the cost per sheet for maps of the period. He was not charging for a product quite as complex as a geographical map, however, and the size of the paper used for the *Carte chronographique* was smaller, thus cheaper.³⁷ The cost of

Lettson's phrase "revolution of centuries" echoes the phrase in the *Journal des sçavans*, "revolution des siècles." Evidently Lucretius uses this phrase in *De rerum natura*.

³⁴ The August 1753 review of the *Carte chronographique* in the *Journal de Trévoux* repeats the information for the public: "Le prix en feuilles est de 12 liv. Avec la machine 15 ou 18 liv. suivant la parure." (The price in sheets is 12 livres; with the apparatus, 15 or 18 livres according to ornamentation.)

³⁵ Examples from the *Journal des sçavans* (Amsterdam edition), May 1754, where 17 maps in all are listed: p. 117: "Carte de France," 24 sheets, 9 livres in sheets; p. 119: a "Calendrier perpétuel," mounted on cloth and over gilded rollers, cost 18 livres.

Cost of a run of the *Journal des sçavans*: "La Collection du Journal des sçavans, depuis 1665, jusqu'en Septembre 1753, (en 168 Tomes:) prix 250 livres, argent de France. C'est très-bon marché." (*Journal des sçavans*, p. 253, March 1754.)

Example from *Mercure de France* (September 1753) pp. 108–109: M. A. Petit's "Anatomie chirurgicale . . ." (Paris, 1753) advertised at 15 livres, bound.

See also M. S. Pedley, "The Subscription List of the 1757 *Atlas Universel*: A Study in Cartographic Dissemination," *Imago Mundi* (Amsterdam, 1979), p. 74.

³⁶ Pedley, "Subscription List," p. 74.

³⁷ Here are some other observations on the price of Dubourg's machine as well as some data on comparable prices for printed materials at the time:

In the 1750s the exchange rate for a French livre has been given at 10.5 pence to one livre. (See *The State of France, in a clear Account of the Revenues of that Kingdom; of the Receipts and Issues*, . . . (London, 1760), page [iv] showing a two-column table converting "French Livres" to "British Money.") We know that an uncolored impression of an engraved plate in England at this time cost about 6 pence. (In England during the 1750s printed materials were sold at the following prices, based on a somewhat unsystematic survey of the ESTC: Single issue of a newspaper, 2 pence; Map of Tobago [single engraving, published in the 1750s], "priced 6d. neatly coloured 9d.;" Book of Common Prayer, 5 shillings unbound [4to], 10 shillings unbound large paper; Octavo pamphlet, a range of 1 penny for a sermon to 1 shilling, 6 pence, for a pamphlet published by Andrew Millar. The average cost of a pamphlet seems to have been about 4 to 6 pence.) Hence, Dubourg's 35 plates at 12 livres equals about .34 livre per plate. In England, .34 livre equaled a bit less than 4 pence. It appears that the price per plate in Paris at the time was about two-thirds of what it was in London. The cost of the

the machine itself ranged from three to six livres more than the cost of the *Carte* in sheets. It is difficult to put the cost of the apparatus into historical context simply because it was unique as a housing for a printed work; however, at this time a binding for a 108-sheet atlas cost twelve livres.³⁸

Just how expensive was the *Carte* for a "man of letters," just the sort of person Dubourg wanted to reach? According to M. S. Pedley, "Parish priests, . . . , academicians like Diderot, and lesser magistrates all earned between one and three thousand livres per year, an average of about 200 livres per month."³⁹ The cost of the *Carte chronographique* amounted to about six percent of a month's salary, at a time when most of one's income was spent on food. Apparently only a few machines were sold. Dubourg died "practically penniless, . . . creditors having attached everything belonging to [him]."⁴⁰ Moreover, the planned revised edition of the *Carte* did not appear during Dubourg's lifetime. Perhaps the "machine" was just beyond the means of its intended purchasers. Perhaps they did not learn of its existence; it was sold, evidently, not by the usual booksellers, but by parallel outlets for particular kinds of popular books such as almanacs or breviaries. This parallel trade was chiefly carried on by clothiers and haberdashers and was a regular source of complaint by the licenced booksellers.⁴¹ It also handled self-published books like Dubourg's *Carte*.

machine alone (6 livres) equaled about 5 shillings, 3 pence in England.

The subscription price for the *Encyclopédie* was originally set at 280 livres, but it eventually came to 980 livres. (Darnton, *Business of the Enlightenment*, p. 33.)

³⁸ Pedley, "Subscription List," p. 73. Also, a skilled servant in France, 1750–1759, made an average of 156 livres per year; by this measure, at 5 livres, the machine cost about 2 to 3 days' work. See Sarah C. Maza, *Servants and Masters in Eighteenth-Century France: The Uses of Loyalty* (Princeton: Princeton University Press, 1983), p. 340.

³⁹ Pedley, "Subscription List," p. 73.

⁴⁰ Aldridge, "Jacques Barbeu-Dubourg," p. 361.

⁴¹ See David Pottinger, *The French Booktrade in the Ancien Régime* (Cambridge: Harvard University Press, 1958), pp. 138–146. Dubourg's explanatory pamphlet tells us the names of two other gentlemen involved in distributing the *Carte*, one of them named "Lamote," who may have been a relative. Dubourg had a nephew, Jean l'Air de la Motte, who is mentioned in Coder's letter to Franklin (217 December 1779). Or perhaps "Lamote" was a bookseller, although they were usually located on the rue St. Jacques. According to Appendix B of Robert Darnton's *Business of the Enlightenment*, one "De la Mote" is listed in 1777 as buying a copy of the quarto edition of the *Encyclopédie*. See also Delaury, "Vieux médecins mayennais," p. 68.

The articles in the *Mercure de France* say that the *Carte chronographique* was sold "In Neillier, Marchand Mercier, à la croix d'Or, rue S. Denis, vis-à-vis la rue des Lombards." The address is the same as for "Lamote," but the vendor's name is different. Since the *Mercure* appeared in December, later than other announcements of the ma-

The engraver of the *Carte* was A. Cosmant, whose name appears on the last portion of the time-line. We do not know who he was, for Cosmant does not appear in any of the usual biographical sources for engravers in the fine arts.⁴² Although he may have been employed in the map trade, another possibility seems more likely. A contemporary, Félix Vicq d'Azyr, tells us that Mlle. Biheron, a noted anatomist who taught both Diderot and Dubourg, issued the explanatory publication accompanying Dubourg's *Carte chronographie*. According to one authority, Mlle. Biheron "excelled in making anatomical models and in teaching anatomy . . . [and] this lady knew Franklin." It is also known that "Diderot had studied anatomy with Mlle. Biheron, who for some time had been his neighbor on the Place de l'Estrapade."⁴³ Given the connection to Mlle. Biheron and the fact that Dubourg was a member of the Paris medical faculty, Cosmant may have been an engraver of illustrations for medical books.

The paper of the *Carte* was produced in Auvergne, the region southeast of Lyons which according to Alan Stevenson "then made the best paper."⁴⁴ The paper size is indicated by the watermark, which consists of the date 1742 centered over a bunch of grapes: "raisin" (grape) denotes paper known as "grand raisin," which is recorded to have a sheet size of 17 *pouces* high by 22 *pouces* and 8 *lignes* wide.⁴⁵ The countermark opposite the watermark reads "C Pignon Moyen," followed by "Auvergne" on the second line. *Moyen* (medium) refers to the quality of paper, which could be one of five grades, according to headnote for the table of paper sizes in the *Encyclopédie*.⁴⁶ The paper maker named Pignon is unknown; however, he may be re-

chine, perhaps Lamote was an earlier vendor who sold his shop to Mercier. The *Mercure* also says that the machine had been announced in the issue of the previous June, but I have been unable to locate the announcement.

⁴² The engraver's name is not in standard sources such as Theime-Becker or Benet, and also not in the more specialized Roger Beraldi and Henri Portalis, *Les graveurs du XVIII^e siècle* (Paris, 1880).

⁴³ R. Loyalty Cru, *Diderot as a Disciple of English Thought* (New York: Columbia University Press, 1913), p. 108, and note 29 on page 109, citing a note in Diderot's *Oeuvres* (Paris: Garnier, 1875–1877), Vol. 9, p. 240.

⁴⁴ Alan Stevenson, "Bibliographical Method," *Catalogue of Botanical Books in the Collection of Rachel McMasters Miller Hunt*, 3 vols. (Pittsburgh, 1961), Vol. 2, Part 1, p. clxxviii. The countermark opposite the watermark is: (all text and symbols in cartouches) [line one:] C [heart symbol] PIGNON MOYEN [followed by second line, centered reading] AUVERGNE.

⁴⁵ According to the table in "Papeterie," *Encyclopédie*, Vol. 11, p. 844. See also the article by Stevenson mentioned above.

⁴⁶ "Papeterie," Vol. 11, p. 844.

lated to Sebastien Pignon, who was in business in the area in the 1630s.⁴⁷ In the Princeton copy of the *Carte*, the paper has been trimmed close to the plate line in order to make the time-line fit into the apparatus.⁴⁸

The Princeton copy of the *Carte* has a number of changes to the printed text written in by hand. Added to the time-line are records of the discovery of the circulation of blood ("circulation du sang démontré") by William Harvey in 1629, a 1728 cure for a blind person ("guérison d'un aveugle"),⁴⁹ the 1747 excavation of Herculaneum ("ville de Herculane trouvée sous terre"),⁵⁰ and Franklin's famous kite experiment in the summer of 1752 which proved the identity of lightning and electricity ("orages démontrés électrique").⁵¹ In the horizontal band for notable persons, at the point for the year 1752, the name "Cheselden" is added, followed by the symbol for an anatomist. William Cheselden was, as D'Alembert says, "célèbre Chirurgien de Londres;" he died in 1752.⁵² Almost all of these hand-written additions concern events or persons in England or the British colonies. We do not know who made the additions, but we do know that Dubourg was strongly influenced by English thought, especially that of Viscount Bolingbroke, that he read English well enough to translate Franklin and others into French, and that he had a number of American and English friends. The English aspects of the manuscript notations suggest that they were added by Dubourg himself.⁵³

⁴⁷ Mentioned in C. M. Briquet, *Les Filigranes*, 4 vols. (Leipzig: K. W. Hiersemann, 1923); Vol. 3, p. 548.

⁴⁸ Plate size is 16 inches by 22 inches English.

⁴⁹ Evidently, the case reported by William Cheselden in *Philosophical Transactions of the Royal Society of London*, No. 402 (April, May, and June, 1728, issued in vol. 35 published by W. Innys at London in 1729) and cited by D'Alembert in his article "Aveugle" in the *Encyclopédie*.

⁵⁰ Excavations began in 1738. Reports of the site appeared in a number of journals, including the *Philosophical Transactions of the Royal Society of London*, beginning with volume 41.

⁵¹ Franklin proposed his kite method for testing lightning in 1751 in his letter to Peter Collinson, published in the *Philosophical Transactions of the Royal Society of London*, No. 45 (1751). At Marley-la-Valle, on 10 May 1752, Dalibard performed Franklin's experiment with success. All of Franklin's work on lightning was published in his *Observations on Electricity* (London, 1751–1753 and later), which was translated and published in France by Dubourg in 1773 under the title *Oeuvres de M. Franklin, . . . avec des additions nouvelles*, where he also includes at the front an eight-page "Histoire succincte de l'électricité." Franklin's work on "feu électrique" is covered in the *Encyclopédie* in the article by that name (Vol. 6). Later experiments involving thunderstorms were also noted in the *Philosophical Transactions of the Royal Society of London*.

⁵² "Aveugle" in the *Encyclopédie*, Vol. 1, p. 872. For information about William Cheselden, see *Dictionary of Scientific Biography*.

⁵³ Chronologically prior to these additions are Agrippa and Agrippa II.

⁵⁹ Both Dubourg and the 1838 editor divide all time into three epochs, each with its own abbreviation: 1) Creation to the founding of Rome, a.d.m. ("ans du monde," 1753 ed.) and d.m. ("du monde," 1838 ed.); 2) Rome to the Birth of Christ, a.d.r. ("ans de Rome," 1753) and d.r. ("de Rome," 1838); and 3) Christ to the present, a.d.j.c. ("ans de Jesus Christ," 1753) and e.c. ("ère chrétienne," 1838). In the Princeton 1753 "machine," the abbreviations appear in manuscript. In the 1838 plate-book edition, the abbreviations are engraved.

nineteenth century.⁵⁷ He further notes that he has indicated the starting date of events in a slightly different manner than the 1753 original. Dubourg had drawn a vertical dotted line from the first letter of the event or person recorded up to the time-scale. The 1838 editor abandoned this convention, saying that it seemed to crowd the display too much. Nonetheless, one can still fix the beginning date for an event on the 1838 chart by a simple convention keyed to the index, which the editor describes with two examples.⁵⁸

The 1838 editor also emphasizes that the intent of the time-line is to improve understanding of a subject that is otherwise "aride, ingrate et fastidieuse."⁵⁹ He notes how students seem enthralled by world maps, pouring over them avidly, even during their leisure time. This same graphic appeal, he thinks, can be duplicated by "chronographie," a time-line that shows "la marche progressive." Moreover, just as a world map shows in one comprehensive view the relative size and positioning of the continents, so a time-line allows for understanding "le synchronisme" of world events.



The 1753 *Carte chronographique* is truly an embodiment of the Enlightenment. A number of remarkable physical features make clear the purpose of the *Carte*, which, like the *Encyclopédie*, was intended "to set forth, as far as possible, the order and interrelationship of human knowledge."⁶⁰ Nevertheless, the *Carte* maintains elements of an older tradition that favored emblem and allegory and linked knowledge with morality.⁶¹ The symbols used to characterize persons

⁵⁷ *Chronographie* (1838), p. 7.

⁵⁸ *Chronographie* (1838), p. 6.

⁵⁹ *Chronographie* (1838), p. 5.

⁶⁰ D'Alembert, "Discours préliminaire."

⁶¹ This duality resembles the two representations of universal knowledge published in the *Encyclopédie*: 1) the schematic tree laying out reason, memory, etc., and 2) the allegorical frontispiece. We know from John Adams that Dubourg loved allegorical paintings. On 20 May 1778 John Adams wrote: "Dined this day at Dr. Dubourg's, with a small Company, very handsomely but not amidst those Signs of Wealth and grandeur that I see every where else. I saw, however, more of Sentiment, therefore more of genuine Taste than I had seen in other places where there was ten times the magnificence. Among his Pictures were a development of the Interior decorations, and of the Paintings on the Ceiling of the Gallery of Versailles. The Physician Erasistratus discovering the Love of Antiochus. The Continnence of Scipio. The Adieus of Hector and Andromache, in which the Passions were so strongly marked that I must have been made of Marble, not to have felt them and been melted by them. I had not forgotten Adieus, as tender and affecting as those of any Hector or Andromache that

and events are from the older tradition, and their concept parallels the ideas found in Ripa's *Iconologia*. Dubourg includes in his time-line more than just kings and princes, battles and treaties; he records almost eighty sorts of historic persons, ranging from members of the ruling caste to "artiste, assassin, naturaliste, cruel, débauché, évêque, empoisonneur, hérétique, martyr, ministre, orateur, prudent, rusé, savant, usurpateur" and so forth.⁶² Unlike other earlier or even contemporary time-lines, Dubourg's includes events having little or nothing to do with matters of state. A brief survey — from Rolewinck's *Fasciculus temporum* (1474, with many editions thereafter) to the *Tablettes chronologiques* (1680 – 1682) of Marcel — shows that, with few exceptions, only royal, state, church, or official persons and events were deemed worthy of record. Dubourg includes intellectuals, Protestants, and many of the "gens de lettres" as players on the historical stage. He considered all of them people who could shape the course of history. Moreover, many of Dubourg's wide array of individuals symbolize a moral status ("assassin, débauché, martyr"). To Dubourg, all history teaches a moral lesson, just as, for Diderot, all knowledge has moral import.⁶³ In addition, Dubourg uses any of eighty-three symbols to characterize each person recorded. These symbols have their own complex vocabulary and, to some extent, seem based on certain common emblems of Dubourg's day, such as a dagger to indicate a murderer or assassin.⁶⁴

ever existed, with this difference, that there were four Astyanaxes instead of one in the Scene. With Feelings too exquisite to produce tears or Words, I gazed in Silence at every Line, at every light and shade of this Picture, and could scarcely forgive Homer for introducing the Gleam of the Helmet and its Effect upon Astyanax, or any circumstance which could excite a Smile and diminish the Pathetic of the Interview." L. H. Butterfield, ed., *John Adams' Diary and Autobiography* (Cambridge: Belknap Press, 1961); Vol. 4, pp. 105–109.

⁶² The table is at the end of the explanatory pamphlet for the *Chronographie*; it is an alphabetical table explaining the symbols given on the first plate of the 1838 edition of the *Chronographie*. A comparison of the 1753 symbols and those of 1838 shows a number of changes. Professions were added (e.g. writer, architect, engineer, traveler-explorer) and some were divided (e.g. historian and chronologist were one in 1753 and made two in 1838); some other categories were also added (e.g. antipopes).

⁶³ For Diderot, the purpose of an encyclopedia of knowledge is stated in the article "Encyclopédie" published in the *Encyclopédie*, Vol. 5, p. 635: An encyclopedia exists "to assemble the knowledge scattered over the surface of the earth; to explain its general plan to the men with whom we live and to transmit it to the men who come after us; in order that the labors of centuries past may not be in vain during the centuries to come; that our descendants, by becoming better instructed, may as a consequence be more virtuous and happier and that we may not die without having deserved well of the human race."

⁶⁴ A table of these categories together with their codes is given in the 1753 pamphlet and on the first plate of the 1838 edition of Dubourg's *Chronographie*.

Dubourg wanted his readers to make choices — to choose the way of virtue over the way of vice. He believed that, in order to make those choices effectively, people should have history presented clearly and distinctly, and in a way that gives a true sense of perspective. This true sense was derived from his innovative way of depicting history on his chronology machine by means of a uniform scale for the measurement of time. The entire line is divided into equal increments, each of which represents one year.⁶⁵ The events of the past are then placed along the scale according to the year in which they began. A glance at the beginning of the line shows long stretches of time with no recorded events; the end of the line (the 1700s) is dense with them. Such placing of human events against an absolute scale was unlike time-lines before it. Dubourg chose to map the events of time against a rational and formal grid. Such mapping seems to be in harmony with the moral intent of the whole array. Dubourg seems to agree with Diderot that, just as we become better instructed by knowing a segment of knowledge in the context of all knowledge, so we can become better informed about the past by seeing its absolute place in all time. An English contemporary of Dubourg expresses this intent as follows:

The more Modern Tables of Talent, Marshal,⁶⁶ Fresnoy, and those composed by an Anonymous Author from Petavius, have all of them made one great mistake. For their chief Aim seems to have been pointed, to the contracting of History into as little Room as they could, by which they have lost the true Connection and Union of its Parts, which can never be preserved, without expanding them, according to the Series of single Years; and we therefore venture to affirm, that this Principle is the most essential, in the Texture of a Chronological Table. For it is in Chronology as in Musick, where the Harmony does not arise,

⁶⁵ Diderot describes the way Dubourg has laid out world events in a time-scale in the first three paragraphs of his article "Chronologique (Machine)": "The scale is divided in small equal parts, such as those that mark the degrees on a large circle of the sphere." The placing of the events on the scale allows one to determine when events finish and start, relative to each other. Heretofore, similar time-lines had expressed only sequential relations; Dubourg shows synchronous events as well.

⁶⁶ "Marshal" is the French author Guillaume Marcel.

from any single Note, or from any Number of Notes, but from their being properly proportioned and tuned to each other, where, without the exact Disposition of Time and Place, the true Union of Concert is broken, and the best Musick may become Discord.⁶⁷

Like other *philosophes*, Dubourg certainly held to the notion that "knowledge came from the senses and not from Rome and Revelation. The great ordering agent was reason, which combined sense data, working with the sister faculties of memory and imagination."⁶⁸ This ordering was expressed not only through the *Encyclopédie* itself, but also graphically in the work's frontispiece and diagrammatically in two charts: the "systematic chart of human knowledge" in volume one and the "genealogical tree of human knowledge" in volume two of the tables for the *Encyclopédie*.⁶⁹



What prompted Dubourg to create the *Carte chronographique* with its new concept of a mapped and didactic time-line? Throughout his life Dubourg showed great interest in popularizing knowledge. He was a member of the faculty of the University of Paris, and taught there with "brilliant success."⁷⁰ He "devoted his later years to popularizing knowledge of America in France by translating the writings of Dickinson, Franklin, Rush, and others."⁷¹ In the early 1760s he edited and published the *Gazette d'Epidaure, ou Recueil hebdomadaire des*

⁶⁷ This is the opinion of John Blair in the Preface to his *Chronology and History of the World* (London, 1754). The copy of Blair's *Chronology* in the Princeton University Library once belonged to John Witherspoon, and has an elaborately gilt-tooled book label. Blair's own time-line, according to Blair himself, also included two other "improvements": "the Principal Annals of Universal History" added to the "Aeras of Time, and to the Succession of Kings" — in other words "fixing of these (Remarkable) Events to the Precision of Months and Days;" and "Column of Statesmen and Warriors" is added because they are "the great Actors in the Publick Transactions of the World." "Mons. le President Henaut seems to have understood the great Use of this Column, as appears, from his excellent Chronological Abridgement, of the History of France, where, . . . he has given us a List of such . . ."

⁶⁸ Darnton, *Business of the Enlightenment*, p. 7.

⁶⁹ This tree was done in 1769 by C. F. Roth, a German schoolmaster.

⁷⁰ Aldridge, "Jacques Barbeau-Dubourg," p. 353.

⁷¹ Butterfield, *Letters of Benjamin Rush*, Vol. 1, p. 77, note 1.

nouvelles de médecine, which has been described as "one of the most interesting of eighteenth-century periodicals . . . present[ing] correspondence, original comments, and extracts on technical matters of surgery and medicine, as well as . . . opinion on such subjects as the use of coffee, the nourishing of infants, the nature of sympathy, Franklin's lightning rods, and projects to teach children to swim."⁷² The *Carte chronographique* fits this general pattern of making knowledge conveniently and easily accessible.

Dubourg's life can be described as a series of vocational phases. At age sixteen (1725) he completed his studies and decided not to continue into "sacerdotal office." In 1748 Dubourg was admitted as doctor of medicine to the Paris faculty. Between 1725 and 1748 he undertook a series of intellectual projects in addition to his medical studies. In 1741 he was granted permission "to translate Pope's private edition of Bolingbroke's *Letters on the Study and Use of History* (1738?), provided that he promise, as Pope had done previously, that he would not release the work during Bolingbroke's lifetime."⁷³ Dubourg evidently met Bolingbroke in France sometime between 1734 and 1743, while Bolingbroke was in exile there. These were the years immediately preceding publication of the time-line.

Bolingbroke's *Letters*⁷⁴ focus on issues fundamental to philosophical men of the time:⁷⁵ Exactly what is it that reason does? How is reason different from experience? Can reason lead us to virtue? Answers to these questions involve an understanding of history — how it differs from experience, how it affords examples of virtuous men, how it can teach the way of reason. Bolingbroke maintains that a study of his-

⁷² Aldridge, "Jacques Barbeau-Dubourg," p. 225.

⁷³ Ibid., p. 336, citing Dubourg's preface to his translation of the *Letters*, published in Berlin in 1752 under the title *Lettres sur l'histoire par Henri Saint-Jean, Lord Vicomte Bolingbroke*. Dubourg also published selections of his translation of Bolingbroke's *Letters* in the periodical, *Mémoires pour l'histoire des sciences & des beaux arts* (Octobre, 1752).

⁷⁴ Bolingbroke died in 1751. A. Millar published two editions of the *Letters* in 1752. The first, in two volumes, has Letters I – VIII followed by Bolingbroke's two letters to Lord Bathurst. The second ("new edition, corrected") appeared in one volume, reprinting the contents of the first and adding an essay, "Reflexions on Exile," dated 1716. Millar says that the last essay is printed from the "author's original manuscript, as he himself had finished it for the press [so that] the public may not be imposed upon by any lame and unequal translation . . . from the French, in which language part of it has been lately printed, and retailed in a monthly Mercury. . . ." Presumably Millar is referring to Dubourg's translation.

⁷⁵ Bolingbroke's *Oeuvres* (Geneva, 1760) were supplied by the Société Typographique de Neuchâtel to various major dealers, according to Robert Darnton in a recent unpublished study on the clandestine book trade.

tory leads to virtue because it causes men to compare themselves with others:

There is scarce any folly or vice more epidemical among the sons of men, than the ridiculous and hurtful vanity, by which the people of each country are apt to prefer themselves to those of every other; and to make their own customs and manners and opinions the standards of right and wrong, of true and false. The Chinese mandarins were strangely surprised, and almost incredulous, when the Jesuits shewed them how small a figure their empire made in the general map of the world. . . . Now nothing can contribute more to prevent us from being tainted with this vanity, than to accustom ourselves early to contemplate the different nations of the earth in a vast map⁷⁶ which history spreads before us, in their rise and their fall, in their barbarous and civilized states, in the likeness and unlikeness of them all to one another, and of each to itself.⁷⁷

Obviously, the "machine" or apparatus itself reinforces the ideological message of the time-line. Its significance lies not only in its content, but also in its physical form. One contemporary, Dr. J. C. Lettsom, a London doctor and friend of Dubourg, remarked on how the rolling of the time-line over the cylinders "imitated the revolutions of centuries."⁷⁸

It is also possible that Dubourg was not telling the whole truth to Franklin when he claimed to have come upon the idea of a "chart of history" several years before Priestley, for there are at least two similar works which Dubourg might have seen and which may have influenced him. One was the *Atlas historique*, produced in Amsterdam by François l'Honoré and the Châtelain family. The *Atlas* has a long and complicated publishing history; it was a seven-volume work issued first over a number of years (1705 – 1720) and then re-issued thereafter as a set at irregular intervals until 1739. Aimed at a popular readership, it attempted to tie together in one convenient vehicle

⁷⁶ Italics are mine.

⁷⁷ Bolingbroke, *Letters* (London: A. Millar, 1752 [1st ed.]), pp. 29–30.

⁷⁸ J. C. Lettsom, "Memoirs of Jacques Barbeau Dubourg" in *Memoirs of the Medical Society of London*, Vol. 1 (London, 1787) p. 482. The review of the "machine" in the *Journal des sçavans* (Amsterdam edition, October, 1753) used the same phrase.

"history, chronology, and geography."⁷⁹ Maps, charts, and text are all assembled into a massive whole, involving the work of at least five collaborators. One important collaborator, the anti-establishment Nicolas Gueudeville, says in the preface:

[T]he story of history . . . is of vital importance for one's education, and a great source of moral teaching. But it is also full of difficulties, obscurities and complications, and sometimes dull. The intention of the *Atlas historique* is to make the study of history agreeable and accessible to all ages. For this reason the author has also included geographical and chronological information that is inseparable from the study of history. . . . [T]he *Atlas historique* . . . for the first time brings all this material together in such a way that it is immediately available to the reader, in a well laid out and digestible form. . . . [T]here are many visual aids in the form of maps, chronological and genealogical charts, and portraits that allow the reader to visualize and memorize the events, people, and places referred to.⁸⁰

Without doubt, Dubourg's explanatory text for his *Carte* echoes strongly the themes and emphases of Gueudeville's preface to the Châtelain *Atlas*. Moreover, one of the charts in the *Atlas* used symbols to annotate the moral character of the personages depicted — that for the Roman emperors published in the first volume.⁸¹ In fact, the sympathies of both men for reason and the common man, and their antipathy towards cruelty, the Pope, and tyranny are so close that it is difficult not to conclude that the *Atlas* influenced Dubourg.

The second chart was published just three years before Dubourg's *Carte*. In 1750, there appeared the *Mappe-monde historique, ou Carte chronologique, géographique et généalogique des états et empires du monde*.⁸² Evidently it was compiled by Jean Dartois and drafted by the Abbé

⁷⁹ "Preface to the *Atlas*," p. 1. See also Aubrey Rosenberg, *Nicolas Gueudeville and His Work* (1652–172?) (The Hague, 1982), pp. 79–91, 164–166, and 253–257.

⁸⁰ Rosenberg, "Preface," pp. 79–80.

⁸¹ Walter Goffart (Toronto) pointed this out to me. The chart is number 15 in the volume.

⁸² Copy in the British Library, shelfmark K. 4. 46 2. It is possible that this is the chart objected to by Joseph Priestley in his two popular eighteenth-century books: *A Description of a Chart of Biography* (first published in 1765; many editions down to 1820) and his *A Description of a New Chart of History* (first published in 1769; fifteenth edition in 1816).

Barbeau de la Bruyère, who had possibly just returned to Paris after working for a number of years in Amsterdam for the map-sellers there.⁸³ Little is known about the publishing history of the *Mappe-monde*, but its content and physical layout is similar to Dubourg's *Carte*. The *Mappe-monde* has a time scale running down the sheet instead of across the top. It covers "from 2000 B.C. to 1700 A.D., [with] uniform intervals start[ing] off as units of 500 years, changing to 250 at 1000 B.C., 200 at the birth of Christ (4 B.C.!) and finally 100 at 1000 A.D. and on. . . . The other scale along the top represents Europe, *Asie*, *Afrique*, *Amerique*, and subdivisions within. [The chart appears] difficult to use because the empires (Empire des Romains, des Turques, etc.) swell and contract beyond the national boundaries over the years; thus, Empire de Charlemagne starts off in bits of France and Allemagne and takes over more or less of their columns as the years pass, spilling over nearly into the Popes at one point and turning eventually into the Bourbon dynasty."⁸⁴ Dubourg, in contrast, ran his time scale in uniformly spaced annual units across the top of the sheet, and ranked his historical data below it.

Then there is the final puzzling question: Why was Dubourg's *Carte chronographique* noticed only when it first appeared, subsequently remaining little known until the new edition was issued eighty-five years later? Similar charts issued in England, such as Priestley's *Chart of Biography* (1765) and *Chart of History* (1769), evidently sold extremely well: Priestley testified to that fact, and we know that his explanatory pamphlet for the *Chart of History* went into at least fifteen editions. Moreover, Priestley's history chart was copied in America by Amos Doolittle and seems to have been the basis for a remarkable chart issued in Vermont in 1813.⁸⁵

The answer to this final question may have nothing to do with pub-

⁸³ It was engraved by Desbruslins. Perhaps Barbeau de la Bruyère encountered the Châtelain *Atlas* there. The map was sold on the Quay de l'Horloge du Palais, where the map trade of Paris was situated.

⁸⁴ Martin Davies (British Library) describing the BL copy in a personal communication, 22 February 1990. A recent commentator on the *Mappe-monde* found it "awkward": "Sa *Mappemonde historique* (1750) est une sorte de tableau de l'histoire du monde, maladroitement découpée en 59 carrés, représentant les 59 siècles qui s'étaient écoulés d'après lui depuis le commencement du monde." *Dictionnaire de Biographie Française* (Paris, 1951), Vol. 5, col. 252.

⁸⁵ Doolittle's chart was based on the seventh London edition, and was issued in New Haven. There is a copy in the Map Division of the Library of Congress. The second chart, *Chronology Delineated*, was issued in Weathersfield, Vermont, in 1813. It was engraved by James Wilson of Bradford, Vermont, and Isaac Eddy of Weathersfield, and published by Isaac Eddy. There is a copy in the New York Public Library.

lishing monopolies, or governmental suppression of "philosophical" ideas, but simply with Dubourg himself. When we compare Dubourg's work with that of analogous cases — the Châtelain atlas and Priestley's charts — an interesting fact emerges. Both Priestley and Châtelain worked continually on revisions of their works after they were first published. Certainly for Priestley, the charts were part of his literary property — the continued development of which yielded steady income. In addition, the charts helped him explain certain political ideas that he favored.

In contrast to these programs of revision, Dubourg seems to have let his *Carte* flourish and then go fallow almost immediately. After publishing the *Carte* in 1753, he did not publish anything again until 1761, when he issued his popular health journal, the *Gazette d'Épidaure*. His 1768 letter to Franklin speaks of the *Carte* as though it were a project completed, not as a constantly revised work-in-progress.

Dubourg seems to have abandoned his *Carte*. Moreover, only a few were ever produced, and their physical frailty make it remarkable that any examples survived. The *Carte* provides us with an important example of the ingenuity of men of the Enlightenment. Moreover, from today's point of view, Dubourg's *Carte chronographique* seems to be a long-lost ancestor of the many charts, diagrams, graphs, timelines, even "histograms," that endlessly illustrate our history books.

APPENDIX

DIDEROT'S ARTICLE ON DUBOURG'S CARTE CHRONOGRAPHIQUE

Except for the long s, the spelling and punctuation of the original have been retained.

CHRONOLOGIQUE (MACHINE.) *Chronologie*, Imaginez un assemblage de plusieurs cartes partielles qui n'en forment qu'une grande. La hauteur de cette grande carte n'est guere que d'un pié; sa longueur ne peut manquer d'être très-considérable. Quelle qu'elle soit, elle est divisée en petites parties égales, alternativement blanches & noires, telles que celles qui marquent les degrés sur un grand cercle de la sphere. Il y a autant de ces parties, qu'il s'est écoulé d'années depuis la création du monde jusqu'aujourd'hui. Chacune de ces parties marque une année de la durée du mond. Cette échelle chonologique est formée de la réunion de trois grandes époques; la premiere comprend

depuis la création du monde jusqu'à la fondation de Rome; la seconde, depuis la fondation de Rome jusqu'à la naissance de Jesus-Christ; la troisieme, depuis la naissance de Jesus-Christ jusqu'à nos jours.

Cette échelle ou ligne chronologique est coupée de dix ans en dix ans, par des perpendiculaires qui traversent la hauteur de la carte. Il part des divisions de l'échelle, comprises entre deux de ces lignes, d'autres perpendiculaires ponctuées. De chacun des points de ces perpendiculaires à l'échelle chronologique, ponctuées ou non ponctuées, il s'en élève d'autres ponctuées ou continues, paralleles entre elles & à l'échelle chronologique, s'étendant selon toute la longueur de la carte, & divisant toute sa hauteur. Les perpendiculaires à l'échelle chronologique sont des lignes de contemporanéité; les paralleles à l'échelle chronologique sont des lignes de durée.

Tous les événemens placés sur une des perpendiculaires à l'échelle, sont arrivés au même point de la durée; tous les événemens placés sur une autre perpendiculaire à l'échelle plus voisine de nos tems, ont duré ou fini ensemble. Les lignes paralleles à l'échelle, comprises entre ces deux perpendiculaires, marquent la durée de ces événemens; & l'extrémité de ces deux perpendiculaires aboutissant en-haut, à deux points de l'échelle, on voit en quel tems de la durée du monde les faits contemporains ont commencé & fini. A l'aide d'autres perpendiculaires & d'autres paralleles, on est instruit de combien de tems les faits non contemporains ont commencé & fini plutôt les uns que les autres; & selon l'endroit que ces paralleles occupent sur les perpendiculaires, on connoit les endroits du monde où les événemens se sont passés.

Quant à la multitude & à la variété des faits, elle est immense; elle comprend tous ceux de quelque importance, dont il est fait mention dans l'histoire, depuis la fondation d'un empire jusqu'à l'invention d'une machine; depuis la naissance d'un potentat jusqu'à celle d'un habile ouvrier. Des caracteres symboliques, clairs, & en assez petit nombre, indiquent sans aucune peine l'état de la personne, & quelquefois une qualité morale bonne ou mauvaise.

Il nous a semblé que cette carte pouvoit épargner bien du tems à celui qui sait, & bien du travail à celui qui apprend. On en a fait une machine très-commode, en la plaçant, comme nous l'allons expliquer, sur deux cylindres paralleles, sur l'un desquels elle se roule à mesure qu'elle se développe de dessus l'autre, exposant à la fois un assez grand intervalle de tems, & successivement toute la suite des tems &

des événemens, soit en descendant depuis la création du monde jusqu'à nous, soit en montant depuis nos tems jusqu'à celui de la création.

Description de la machine chronologique. Parties essentielles. La machine chronologique est formée de deux, moitiés parfaitement semblables, & chacune de ces moitiés est composée de deux planches A (voyez parmi nos Planches de Sciences & d'Arts, la Planche de chronologie) d'une ligne & demie ou deux lignes d'épaisseur: il faut considérer deux parties à chacune de ces planches; l'une formant un cercle de quatre pouces de diamètre; l'autre prolongée en forme de tangente à ce cercle, de la longueur de six pouces, sur un pouce de hauteur, dans laquelle sont pratiquées à quatre lignes du bord supérieur, deux mortaises d'un pouce & demi chacune, pour recevoir les tenons de la planche B suivante.

Une planche B de seize pouces de long, non compris les deux tenons qui sont à chaque bout, & cinq pouces & demi de large, & de la même épaisseur que les planches A.

Deux petits rouleaux ou bâtons cylindriques, de quatre lignes de diamètre sur seize pouces de long.

L'un desquels C est terminé par deux pointes de fil-d'archal qui lui servent d'axe.

L'autre D a pour axe, d'une part, une semblable pointe, & de l'autre la manivelle ci-après.

Une manivelle composée de trois pièces. Une poignée E de bois tourné, de deux pouces de long, sur une grosseur proportionnée. Un fil-d'archal F d'une ligne & demie d'épaisseur, dont un bout sert d'axe à la poignée qu'il enfle dans toute sa longueur; l'autre est inséré dans une des extrémités du rouleau D, pour achever son axe, & la partie moyenne est tournée en demi-cercle pour faciliter le jeu de la manivelle. Et un petit bouton G, servant à arrêter la poignée sur son axe, où elle est mobile.

Deux petits crochets de métal H, dont un placé au haut de la partie circulaire d'une des planches A, sert à fixer la machine fermée; l'autre, placé sous l'arrête du prolongement de la même planche A, sert à fixer la machine ouverte.

Deux petits pitons I, faits avec du fil-d'archal, placés au même endroit de l'autre planche A, servent à recevoir les crochets H.

Enfin quatre petites plaques de cuivre mince L, d'environ deux

lignes de large sur sept à huit de long, servent à attacher librement les deux moitiés de cette machine.

Construction de la machine. Les deux planches A, posées de champ, reçoivent dans leurs mortaises les tenons de la planche B, qui est posée horizontalement, & arrêtée avec de la colle forte.

Des trous pratiqués dans les planches A, au haut de la partie circulaire, sur la même ligne que les mortaises, reçoivent les pointes de l'axe du rouleau C, qui se trouve ainsi placé à côté de la planche B, à deux lignes de distance, & excédant son niveau d'une ligne.

Un autre trou pratiqué au milieu de la partie circulaire de l'une des planches A, reçoit la pointe de l'axe du rouleau D; & un pareil trou, semblablement pratiqué au centre de l'autre planche A, est traversé par le bout du fil d'archal F, qui fait l'axe de la manivelle, & termine celui du même rouleau D, ce qui forme la moitié de la machine: l'autre se construit de la même manière, & tous deux sont assemblés par le moyen des plaques L, clouées deux-à-deux, l'une en-dedans, & l'autre en-dehors du bord supérieur du prolongement des planches A, avec deux petits clous qui traversent les planches, & sont rivés des deux côtés, de manière cependant que ces petites plaques puissent se mouvoir sur ces clous qui leur servent d'axes. On a arrondi l'angle supérieur des planches A, pour que les deux moitiés puissent se plier l'une sur l'autre, quand on veut fermer la machine.

Les deux extrémités de la carte chronographique sont collées sur les rouleaux D, autour desquels elles forment leurs circonvolutions, de sorte qu'en tournant une des manivelles, on a toute la facilité possible de faire passer alternativement la carte entière d'un rouleau sur l'autre. Les rouleaux C, en tournant sur leurs axes, diminuent le frottement de la carte, & en facilitent le jeu. Les planches B servent de table pour étaler sous les yeux une portion de la carte comprenant au moins cent quarante ans. Un carton de grandeur convenable, attaché tout-autour de la bordure de la partie circulaire des planches A, forme à chacun des rouleaux D, une enveloppe cylindrique qui sert à conserver la carte; & ce carton, replié sur lui-même à son extrémité supérieure, à un pouce de distance des rouleaux C, renferme une petite verge de fer clouée par ses deux bouts sur le bord des planches A, & lui donne de la solidité.

Cette machine étant pliée sur elle-même & fermée, la carte se trouve à couvert de toutes parts, & fort en sûreté.

L'auteur de cette machine est M. Barbeau du Bourg, docteur en Médecine, & professeur de Pharmacie dans l'université de Paris. On verra bien par le prix qu'il a mis à son invention, que l'utilité publique a été son principal motif. La carte est de trente-cinq feuilles gravées. Afin d'encourager les gens de lettres à l'aider dans le degré de perfection auquel il se propose de porter sa carte, il offre de donner un exemplaire gratis à toutes personnes tenant un rang dans la république des lettres, tels qu'auteurs, académiciens, docteurs, journalistes, professeurs, bibliothécaires, principaux de collège, préfets, &c. qui daigneront lui en rendre un premier avec les remarques, avis, corrections, observations, & autres ratures dont ils l'auront chargé.

✱

CHRONOLOGICAL (MACHINE.) *Chronology*, Imagine an assembly of several partial charts that are joined in order to form one that is single and complete. The height of this large chart is only one foot (pié),⁸⁶ the length is certainly considerable. It is divided into small equal parts, alternately white and black, such as those that mark the degrees on a large circle of the sphere. There are as many sections as there are years which have passed since the creation of the world up to the present time. Each one of these sections marks a year of the duration of the earth. This chronological scale is formed by joining three great epochs: the first from the creation of the earth to the foundation of Rome; the second from the foundation of Rome to the birth of Christ; the third from the birth of Christ to our time.

This scale or time-line is divided every ten years, by perpendicular dotted lines that go through the height of the chart. From the divisions of the scale, between two of these lines, other perpendicular dotted lines are set forth. From each of these points that are perpendicular to the time line, dotted or not dotted, there are other dotted or solid lines parallel to them and the time line, that continue through the entire length of the chart, and dividing all its height. The lines perpendicular to the time-scale are lines of contemporary history; those parallel to the time-scale are the lines of time (durée).

⁸⁶ The chart is sixteen English inches tall. Evidently, in Diderot's time a *pié* consisted of 16 pouces (literal: thumbs) or inches.

All the events marked on one of the perpendicular lines to the scale have arrived at the same point on the time line; all the events taking place on another perpendicular line to the scale closer to our own times, have started and finished together. The lines parallel to the time line, between the two perpendiculars, mark the duration of the events; and the ends of the two perpendiculars ending at the top, at two points of the time line, permit one to see, relative to the duration of the earth, when present events have begun and ended. With the help of other perpendicular and other parallel lines, one can see when non-contemporary events started and finished relative to each other; and depending on the placement of these parallel lines on the perpendiculars, one can see in what part of the world the events took place.

As to the multitude and variety of events, they are enormous, including everything of importance mentioned in history from the foundation of an empire up to the inventions of machines (industry); from the birth of a ruler to that of a clever artisan. Some symbolic devices, which are simple and relatively few in number, identify clearly the status of the individual and occasionally a moral quality of good or evil.⁸⁷

It seems to us that this chart can spare much time for those who know, and much work for those who are learning. We have here a very practical instrument, for as we will explain, by placing it on two parallel cylinders, one of which unrolls as one rolls up the other, thus revealing simultaneously a fairly large interval of time and successively all the following periods and events, either from the time of creation right up to our time, or going from the present back towards creation.

Description of the chronological machine: Essential parts. The chronological machine consists of two completely similar halves, and each of these parts consists of two boards A (see among our Illustrations of Science and Art, the illustration on chronology) one line and a half, or two lines thick:⁸⁸ one must look at the two parts of each of these boards; one [part] forming a circle four inches in diameter, the other [part] projected in the form of a tangent to the circle, six inches long by one inch in height, within which are contrived two mortices each

⁸⁷ These symbols are explained in the table beginning on page 227.

⁸⁸ A *ligne* (literal: line) is equal to about one-eighth of an English inch.

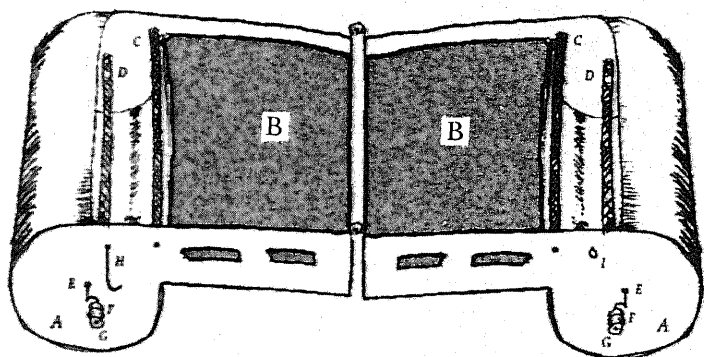


Photo: Don Breza

Drawing of Jacques Barbeu-Dubourg's *Carte chronographique* or *Machine chronologique*, with its parts labelled according to the article by Diderot in the *Encyclopédie*.

one-and-a-half inches [thick and positioned] four lines from the top, which receive the tenons of board B following.

A single board B [is] sixteen inches long, excluding the two tenons which are at each end, [and is] five and a half inches wide, and of the same thickness as the boards A.

Two little rollers, or cylindrical rolls, of four lines diameter by sixteen inches long. One of them C ends with two points of brass wire which act as axis. The other D has for an axis a similar point, and for the other, the handle or crank described below.

A crank consisting of three pieces. A handle E of turned wood, two inches long, by a proportionate width. A brass wire F one line and a half thick in which one end acts as a handle which encases it for its entire length; the other end is attached to the end of the roller D to provide a central support, and the middle part is turned in a half circle to give a little "play" to the crank. And a small button G acts as a stop for the handle on the spindle, where it is movable.

Two small metal hooks H, of which one placed on top of the circular part of the board A serves to keep the machine closed; the other placed beneath the stop of the extension of the same board A, serves to keep the machine open.

Two small eye-bolts I made of brass, placed at the same point on the other plank A, serve to hold the hooks H.

Finally, four thin, small L-shaped copper plates approximately two lines wide by seven to eight lines long are used to connect the two parts of this machine.

Construction of the machine. The two planks A provide a stage for viewing and receive in their mortices the tenons of board B, which is placed horizontally, and fastened with strong glue.

Holes placed in boards A, above the circular part, on the same line as the mortices, accept the points of the axle of the roller C, which is thus placed next to board B, two lines away and exceeding its level by one line.

Another hole made in the center of the circular part of one of the boards A accepts the point of the axle of roller D; and a similar hole, made in the same way at the center of the other board A, has the piece of brass wire F run through it, which forms the axle of the crank handle and ends the same roller D which forms the half of the machine: the other half is constructed in the same way, and both are held together by the ["L"-shaped copper] plates, nailed two by two, inside, and one outside the upper edge of the extension of the other boards A, with two small nails that run through the boards, and are rivetted from both sides so as to allow the two small ["L"-shaped] plates to move on the nails which act as axles.⁸⁹ The upper angle of the board A has been rounded, so that the two parts can be folded down one on the other, when one wishes to close the machine.

The two ends of the chronological chart are glued to the rollers D, around which they turn, so that when turning one of the cranks, one may cause the chart to roll either way, as one wishes. The rollers C, in turning on their axis, reduce the rubbing of the chart, and allow it to move freely. The boards B act as a kind of table so that one can expose to view a part of the chart comprising at least 140 years. A covering of suitable size, attached around the edge of the round part of the boards A, make a cylinder at each of the rollers D to protect the chart; and this card-board covering, folded in upon itself at its

⁸⁹ As is sometimes the case with descriptions published in the *Encyclopédie*, this one does not coincide perfectly with the results of direct observation of the "machine." To be accurate, the passage should read as follows: "... both are held together by the L-shaped copper plates, nailed two-by-two through the board, with one nail placed at the top of board A, the other nail placed at the lower part of board A. The L-shaped plates are fastened together with two small nails finished at both sides so as to make rivets. ..."

top, has an inch of distance between the rollers C, enclosing a small rod of iron nailed by its two ends to the edge of board A, giving it solidity.⁹⁰

This machine, folded up and closed, thus entirely protects the chart, keeping it safe and secure.

The inventor of this machine is M. Barbeau du Bourg, doctor of medicine, and professor of pharmacy at the University of Paris. One can see by the price which he has placed on his invention that the public good has been his principle motive. The chart has thirty-five engraved leaves. In order to encourage literary people to help him achieve the degree of perfection to which he proposes to carry his chart, he offers to give a free copy to any person holding a place in the republic of letters, such as writers, academics, doctors, journalists, professors, librarians, college deans, college presidents etc. who will agree to make corrections and return to him this draft with their remarks, amendations, emendations, corrections and observations.

DUBOURG'S SYMBOLS

Dubourg's system of symbols linked to their verbal equivalents is indeed unique to him. However, in virtually all cases, he borrows each visual symbol from the many traditions that used symbols.

In the eighteenth century there were a number of fields of both popular and academic knowledge in which symbols were used, including almanacs, alchemy, chemistry, astrology, and astronomy. The Church, of course, was full of symbolic artifacts. There were also historical visual encyclopedias, such as Châtelain's *Atlas*, which used symbols in its charts. Dubourg seems to have been familiar with them, for the symbols he uses are borrowed from or based upon all of these fields of knowledge.

Since the point of Dubourg's historical chart is to instruct so as to lead the student to virtuous action, it is not surprising that he uses the expressive techniques of others like Caesar Ripa in the allegorical, emblematic tradition. Ripa's *Iconologia* (London, 1709) is an album of "the various images of virtues, vices, passions, arts, humours, ele-

⁹⁰ Diderot is here describing the casing for the chart: a three-quarter round, papier-mâché cylinder connecting both the upper and lower board A and covering the rolled-up chart. Dimensions for the cylinder: sixteen inches long (as long as board B) by four inches in diameter (the diameter of the circular part of board A).

ments, and celestial bodies." In Ripa, as in Dubourg, the abstract and the concrete are thrown together in an effort to demarcate human character.

The following list is alphabetized according to the English word for the types — professions, offices, characters, etc. — by which Dubourg characterized people.

TABLE: JACQUES BARBEU-DUBOURG'S SYSTEM OF SYMBOLS

Type	Symbol
Admiral	trident of Poseiden
Anatomist	capital A dotted inside with two dots
Artist	builder's square
Assassin	dagger pointing up
Assassinated people	dagger pointing down
Astronomer	astrolabe
Bishop	shepherd's crook
Blessed	astronomical and astrological sign for the sun (a circle with dot at center); also the alchemical sign for gold; gold is traditionally the color of divine power
Botanist, naturalist	sprig of a plant
Chemist	alchemical symbol for sulfur with dot added inside triangle
Colleagues, associates	sign of Gemini, the twins
Conquerer	five-pointed star and arrow
Cruel or merciless	astronomical or astrological sign for Leo, the lion
Debaucher	similar to the astrological sign for the moon descending
Dethroned, chased, retired	three related signs: the basic symbol is a scepter turned toward right, then varied as follows: deposed = staff downwards (negative in value); driven out = orb of septer crossed through; retired = staff upwards (positive in value)

Table (cont.)

Type	Symbol
Fool, inconstant	flag with two dots; flag with white field (flag may be a "whirligig," see Ripa, figure 238 (Pazzia, folly))
Geographer	compass (calipers)
Geometer	square within a circle
Heretic, errant, schismatic	alchemical sign for arsenic with modifications for each subdivided type
Historian, chronologist	hourglass; hourglass with dots
Impious, idolator	stick drawing of the stake or gallows? (symbol seems unique to Dubourg)
Imposter, false prophet	eighteenth-century chemical symbol for "salt alkali"
Inconstant, uncertain	six-pointed star; the eighteenth-century chemical symbol for sal ammoniac (ammonium chloride)
Interregnums	circle symbolic of change and cyclic movement
Judge	open square box
Killed in war	arrow (Zodiacal sign for Sagittarius)
King, emperor	crown
Kingdom	large crown (with fleur-de-lis points)
Legislator	square box with dot in middle
Martyr	wheel of St. Catherine
Medical doctor	snake; Ripa links the snake with the emblem for health (fig. 265, 204); the snake's ability to molt was emblematic of the renewal of life; also viper of Aesculapius
Minister, statesman	astronomical and astrological sign for Jupiter, a sign of domination of the elements and the power of organization
Monk	three-bead segment of a rosary
Musician	eighth-note
Noble, valiant, etc.	heart

Table (cont.)

Type	Symbol
Orator, preacher	astronomical and astrological sign: Mercury (god of rhetoric); then dotted sign of Mercury
Painter	cinquefoil rose, usually associated with beauty
Philosopher, sage	eyeglasses (dotted for a philosopher; undotted for a sage); or, possibly, the alchemical sign for sublimate
Poet	lyre
Poisoned person	vial with top down
Poisoner	vial with top up
Prisoner	alchemical sign for iron vitriol ¹
Prophet	five-pointed star pointing upwards, traditionally associated with the spiritual
Prudent, cunning	convolute; convolute with horizontal line
Punished with death	circle struck through
Rebel	variant form of the sign for arsenic; see "heretic" above
Restored	astronomical and astrological sign for Saturn, who was restored to power
Rich, greedy	crescent moon (the moon was a token of changeableness, cf. Ripa, fig. 155)
Republic	two hands shaking
Ruin	tongue of fire from a ball (earth?)
Saint	Greek cross
Savant	outline of an armillary sphere, the symbol of learning
Sailor	anchor
Scrupulous person, superstitious	pharmaceutical sign for scruple

¹ Rudolf Koch, *The Book of Signs* (N.p.: Dover Publications, Inc., n.d.), p. 72.

Table (cont.)

Type	Symbol
Slothful	astronomical and astrological sign of Cancer (the crab was the sign of irresolution, cf. Ripa, fig. 155)
Soldier, warrior	astronomical and astrological sign of Mars
Sovereign	large crown (5 points)
Sovereign (pontifical)	Papal cross
Stately & majestic	radiant sun
Suicide	two-pointed dagger
Theologian	the orb and cross
Tyrant	circle fully struck over with an "X"; a folk tradition uses it to mean "one child dies" ²
Unfortunate, unlucky	alchemical sign for "note of distillation"
Upright and virtuous	Zodiacal sign for Libra (the balance, sign of justice)
Usurper	circle struck over with an "X" with center open; related to "tyrant"
Wicked, unjust	astronomical and astrological sign for Scorpio; sign of death and destructive forces
Women	dots arranged in a triangular pattern, which was the eighteenth-century chemical symbol for oil; oil is associated with fertility

² Koch, *Book of Signs*, p. 10.