The 1753 *Carte chronographique* of Jacques Barbeu-Dubourg

BY STEPHEN FERGUSON

In the third volume of the *Encyclopédie*, following subjects such as “Chapeau,” “Charlatan (médecine),” and “Choréographie,” there is an unusual article written by Diderot: “Chronologique (Machine).” 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. The verbal description is all there is, and it is difficult to picture 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,
thin line. This line represents time from Creation to Dubourg’s era, with the years marked off vertically in small, equal, one-year increments. 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” and included in the explanatory pamphlet issued together with the machine by Dubourg in 1753. 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 treizième de la Chambre Royale des Libraires & Imprimeurs de Paris on 3 June 1753. Here the Carte is recorded under the title Chronographie universelle & details qui en dépendent pour la chronologie & les généalogies. It is a “privilège d’auteur,” granting M. Dubourg 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 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.” In 1903, Paul Delauny examined, measured, and illustrated the machine for his biographical article on Dubourg published in the Commission’s Bulletin.

According to the catalogue published by the Bibliothèque, Dubourg issued an explanatory sixteen-page octavo pamphlet to accom-
pany the Carte. The imprint of the pamphlet shows that the Carte had been issued in two different formats at different prices: in sheets for 12 livres, or "with the machine" for 15 or 18 livres. 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, Advertisement, and an engraved Explication des Signes employés. 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.}

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 (1449) and as stated by Delamuy, "Vieux médecins mayennais," p. 87: "Attribué à Barbeu par Desportes dans sa Bibliographie du Maine (Le Mans, 1844)."

11 Pages 3–12, 15–16, and 17–18 respectively.

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 vu, 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." 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." 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.

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). Dubourg's *chronographie* is intended to be a science that, like geography, speaks to the eyes and the imagination, "a picture moving and animated." And although there are acknowledged problems with correctly establishing dates for another 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 établissements, enfin où à mesure que la raison se développe & que l'esprit s'ouvre à la vérité, les moeurs 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'yeux est confondu avec le froment, & plus loin ce n'est qu'un olivier & l'inculte. Si cette variété même a droit à 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 Vosgic 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 Troleny certainly endeavored to show the world projected in that manner, but his work was overtaken by Mercator, who in 1595 first showed the continents and seas laid out over a grid made by parallel vertical lines (meridians) and parallel horizontal (latitudes).
16 *Chronographie*, p. 8. "Chronographic" appears to be a word current at the time, but not widely used. The term is used in the 1612 eight-page pamphlet by Nicolas Catherine (1628–1688) entitled *La chronographie de Berry*. By the 16th century, 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 Patou.
17 *Chronographie*, p. 8.
glance world events covered by the book, just roll the Carte to the relevant years and there it is.13 “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.15 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, Caesar 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 using the grammar of chemical symbols in which one basic symbol was modified with certain strokes to denote, for example, “precipitate,” or “sublime.” 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.)

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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 savans (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

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13 Chronographie, p. 13.
14 Ibid.
15 See the appendix on symbols, at the end of this article.
16 Cesare Ripa, Iconologia; or, Moral Emblems. . . (London: B. Motte, 1709).
EXPLICATION des Signes employés

Amoral
Anatomiste
Arliste
Astronome
Bibleux
Botaniste, Naturaliste
Chimiste
Colosse, Affranchis
Conquérant
Cruel
Diable
Déposé, Cagé, Relié
Évêque
Empereur Empeuréon
Fatigué
Femme
F pie, Inconstant
Général, Governor
Géographe
Geographe
Grand
Héritier, Errant, Schématique
Hérauts
Histoire, Chronologique
Impie, Indolore
Imposteur, faux Prophéte
Interrogé
Incertain
Juré, Consulte
Juste
Legislateur

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.
periodization of all history into three epochs. 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 you the attached short explanation 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 Glaucon — 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. Priestley, which is in effect made according to almost the same principles as mine — (indeed) without plagiarism on either 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

31 According to Robert Darnton, Félix Vicq d’Azyr was “secretary permanent 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 Encyclopedie (Cambridge, Massachusetts: Harvard University Press, 1979), p. 433. 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.”
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. Ex.43 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 scâvans.* Ex.44 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." Ex.45 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. Ex.46

Lettsom's phrase "revolution of centuries" echoes the phrase in the *Journal des scâvans*, "revolution des siècles." Equally Lucitenaeus uses this phrase in *De rerum natura.* Ex.47

The August 1753 review of the *Carte chronographique* in the *Journal de Trévoux* repeats the information in 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.) Ex.48

Examples from the *Journal des scâvans* (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 perpetuel," mounted on cloth and over gilded rollers, cost 18 livres. Ex.49

A run of the *Journal des scâvans* (La Collection du Journal des scâvans, depuis 1665, jusqu'en Septembre 1753, en 168 Tomes) prix 250 livres, argent de France. C'est très-bon marché." (The *Journal des scâvans*, p. 253, March 1754.) Ex.50


See also M. S. Pedley, "The Subscription List of the 1757 *Atlas Universel*; A Study in Cartographic Dissemination," *Imago Mundi* (Amsterdam, 1979), p. 74. Ex.52


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 10.8 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 unsystematical survey of the ESTC: Single issue of a newspaper, 6 pence; Map of *Tobago Common Prayer*, 5 shillings unbound [40s], 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 55 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. Ex.53

...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. Ex.54

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." Ex.55 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]." Ex.56 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 brevyairsts. This parallel trade was chiefly carried on by clothiers and haberdashers and was a regular source of complaint by the licensed booksellers. Ex.57 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 80 livres, but it eventually came to 980 livres. (Darnton, *Business of the Enlightenment*, p. 53.) Ex.58


Pedley, "Subscription List," p. 73.


See David Patinger, *The French Books trade 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 Codier's letter to Franklin (17 Dec. 1777). 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 Motte" is listed in 1777 as buying a copy of the quarto edition of the *Encyclopédie*. See also Delaunay, "Vieux médecins mayennais," p. 68.

The articles in the *Mercure de France* say that the *Carte chronographique* was sold "In Neillfds, 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. Although he may have been employed in the map trade, another possibility seems more likely. A contemporary, Félix Vicq d'Azyl, tells us that Mlle. Biheron, a noted anatomist who taught both Diderot and Dubourg, issued the explanatory publication accompanying Dubourg's Carte chronographique. 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." 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." 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. 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. 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.

The engraver's name is not in standard sources such as Theime-Becker or Benêt, and also not in the more specialized Roger Bernaldi and Henri Portail, Les graveurs du XVIIIe siècle (Paris, 1886).


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


lated to Sebastien Pignon, who was in business in the area in the 1690s. 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.

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"), the 1747 excavation of Herculanum ("ville de Herculanum trouvée sous terre"), and Franklin's famous kite experiment in the summer of 1752 which proved the identity of lightning and electricity ("orages démonstrés électrique"). 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, "célebre Chirurgien de Londres," he died in 1752. 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.

58 Plate size is 16 inches by 22 inches English.
59 Evidently, the case reported by William Cheselden in Philosophical Transactions of the Royal Society of London, No. 431 (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.
60 Excavations began in 1728. Reports of the site appeared in a number of journals, including the Philosophical Transactions of the Royal Society of London, beginning with volume 41.
61 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 work on lightning with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success. All of Franklin's work on lightning was published in his experiment with success.
62 See also the article by Stevenson mentioned above.
64 Chronologically prior to these additions are Agrippa and Agrippa II.
In 1838 the entire carte chronographique was reprinted in Paris by the École Polytechnique. It is a massive book, fifty centimeters across, opening to fifty-eight centimeters across. The book contains many maps and diagrams, all of which are colored. The book also contains a table of contents and an index. The cartography is highly detailed and accurate, making it a valuable resource for historians and cartographers. The book is bound in a hardcover and is available in the Rare Books and Special Collections, Princeton University Library.
nineteenth century. 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.

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 fastidieux." 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." Nevertheless, the Carte maintains elements of an older tradition that favored emblem and allegory and linked knowledge with morality. The symbols used to characterize persons 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. 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 Tabletes 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. 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.

Note: The text ends abruptly and contains several incomplete sentences and notes.
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. 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, 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.\(^{69}\)

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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’Épidaure, ou Recueil hebdomadaire des

\(^{66}\) 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.

\(^{67}\) “Marshal” is the French author Guillaume Marcel.

\(^{68}\) 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 . . .”

\(^{69}\) Darnton, Business of the Enlightenmen, p. 7.

\(^{70}\) This tree was done in 1769 by C. F. Roth, a German schoolmaster.

\(^{71}\) Aldridge, "Jacques Barbe-Dubourg," p. 353.

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.”

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.” 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 focus on issues fundamental to philosophical men of the time: 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-}

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

There is scarce any folly or vice more epidemic 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 map 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.

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.”

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

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26 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, “Reflections 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.
27 Bolingbroke’s Ouvres (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.
28 Italics are mine.
"history, chronology, and geography." 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:

[The 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. ... [The 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. ... There 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.]

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. 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. Evidently it was compiled by Jean Dartois and drafted by the Abbé

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79 Walter Goffart (Toronto) pointed this out to me. The chart is number 15 in the volume.
80 It was engraved by Desbruslins. Perhaps Barbeau de la Bruyère encountered the Châtelain Atlas there. The map was sold on the Quay of the Horologe du Palais, where the map trade of Paris was situated.
82 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 1815. 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.

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. 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 starting 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." 83 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. 84

The answer to this final question may have nothing to do with pub-
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’Epidaure. 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 guère que d’un pied; 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 monde. Cette échelle chronologique est formée de la réunion de trois grandes époques; la première 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 troisième, 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 éleve d’autres ponctuées ou continues, parallèles 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 parallèles à l’échelle chronologique sont des lignes de durée.

Tous les événements placés sur une des perpendiculaires à l’échelle, sont arrivés au même point de la durée; tous les événements placés sur une autre perpendiculaire à l’échelle plus voisine de nos temps, ont duré ou fini ensemble. Les lignes parallèles à l’échelle, comprises entre ces deux perpendiculaires, marquent la durée de ces événements; & l’extrémité de ces deux perpendiculaires aboutissant en haut, à deux points de l’échelle, on voit en quel temps de la durée du monde les faits contemporains ont commencé & fini. À l’aide d’autres perpendiculaires & d’autres parallèles, on est instruit de combien de temps les faits non contemporains ont commencé & fini plutôt les uns que les autres; & selon l’endroit où ces parallèles se trouvent sur les perpendiculaires, on connait les endroits du monde où les événements 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 caractères 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 pouvait éparpiller bien du temps 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 parallèles, 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 temps, & successivement toute la suite des temps &
des événeunens, soit en descendant depuis la création du monde jusqu'à nous, soit en montant depuis nos tems jusqu'à celui de la créa-
tion.

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 fomant 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 te-
nons 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 enfilt 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. & un petit bouton G, servant à arrêter la poignée sur son axe, où elle est mobile.

Dux petits chrochets de métal H, dont un placé au haut de la par-
tie 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.

Dux petits pitons I, faits avec du fil-d'archal, placés au même en-
droit 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 po-
sée horizontalement, & arrêtée avec de la colle forte.

Des trous pratiqués dans les planches A, au haut de la partie cir-
culaire, 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 posi-
ble 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 sont de table pour étaler sous les yeux une portion de la carte comprenant au moins cent quarante ans. Un carton de grandeur convenable, atta-
ché 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.
The author of this machine is M. Barbeu du Bourg, doctor in Medicine, and professor of Pharmacy in the University of Paris. He will see well by the prize that he has to his invention, that the utility public has been his principal motive. The work contains thirty-five leaves engraved. In an effort to encourage the use of letters to aid them in the degree of perfection which he proposes to make of it, he offers to give an example gratis to all persons taking a real place in the Republic of letters, such as authors, academicians, doctors, journalists, professors, bibliophiles, principals of colleges, prefects, &c., who will charge them with the first, with remarks, notes, corrections, observations, &c., that they have charged.

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**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), 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, allow 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.

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. 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 mortises each
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 riveted from both sides so as to allow the two small ["L"-shaped] plates to move on the nails which act as axles.\(^{30}\) 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

\(^{30}\) 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.

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

The inventor of this machine is M. Barbeu 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, academicians, doctors, journalists, professors, librarians, college deans, college presidents, etc. who will agree to make corrections and return the chart to him. Without their remarks, emendations, corruptions, and observations, his work is incomplete.

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, humors, elements, 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>
<thead>
<tr>
<th>Type</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admiral</td>
<td>trident of Poseiden</td>
</tr>
<tr>
<td>Anatomist</td>
<td>capital A dotted inside with two dots</td>
</tr>
<tr>
<td>Artist</td>
<td>builder’s square</td>
</tr>
<tr>
<td>Assassin</td>
<td>dagger pointing up</td>
</tr>
<tr>
<td>Assassinated people</td>
<td>dagger pointing down</td>
</tr>
<tr>
<td>Astronomer</td>
<td>astrolabe</td>
</tr>
<tr>
<td>Bishop</td>
<td>shepherd’s crook</td>
</tr>
<tr>
<td>Blessed</td>
<td>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</td>
</tr>
<tr>
<td>Botanist, naturalist</td>
<td>sprig of a plant</td>
</tr>
<tr>
<td>Chemist</td>
<td>alchemical symbol for sulfur with dot added inside triangle</td>
</tr>
<tr>
<td>Colleagues, associates</td>
<td>sign of Gemini, the twins</td>
</tr>
<tr>
<td>Conquerer</td>
<td>five-pointed star and arrow</td>
</tr>
<tr>
<td>Cruel or merciless</td>
<td>astronomical or astrological sign for Leo, the lion</td>
</tr>
<tr>
<td>Debaucher</td>
<td>similar to the astrological sign for the moon descending</td>
</tr>
<tr>
<td>Dethroned, chased, retired</td>
<td>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)</td>
</tr>
</tbody>
</table>

99 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).
<table>
<thead>
<tr>
<th>Type</th>
<th>Symbol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fool, inconstant</td>
<td>flag with two dots; flag with white field (flag may be a &quot;whirligig.&quot; see Ripa, figure 198 (Pazzia, folly))</td>
</tr>
<tr>
<td>Geographer</td>
<td>compass (calipers)</td>
</tr>
<tr>
<td>Geometer</td>
<td>square within a circle</td>
</tr>
<tr>
<td>Heretic, errant, schismatic</td>
<td>alchemical sign for arsenic with modifications for each subdivided type</td>
</tr>
<tr>
<td>Historian, chronologist</td>
<td>hourglass; hourglass with dots</td>
</tr>
<tr>
<td>Impious, idolator</td>
<td>stick drawing of the stake or gallows? (symbol seems unique to Dubourg)</td>
</tr>
<tr>
<td>Imposter, false prophet</td>
<td>eighteenth-century chemical symbol for &quot;salt alkali&quot;</td>
</tr>
<tr>
<td>Inconstant, uncertain</td>
<td>six-pointed star; the eighteenth-century chemical symbol for sal ammoniac (ammonium chloride)</td>
</tr>
<tr>
<td>Interregnums</td>
<td>circle symbolic of change and cyclic movement</td>
</tr>
<tr>
<td>Judge</td>
<td>open square box</td>
</tr>
<tr>
<td>Killed in war</td>
<td>arrow (Zodiacal sign for Sagittarius)</td>
</tr>
<tr>
<td>King, emperor</td>
<td>crown</td>
</tr>
<tr>
<td>Kingdom</td>
<td>large crown (with fleur-de-lis points)</td>
</tr>
<tr>
<td>Legislator</td>
<td>square box with dot in middle</td>
</tr>
<tr>
<td>Martyr</td>
<td>wheel of St. Catherine</td>
</tr>
<tr>
<td>Medical doctor</td>
<td>snake; Ripa links the snake with the emblem for health (fig. 205, 204); the snake's ability to molt was emblematic of the renewal of life; also viper of Aesculapius</td>
</tr>
<tr>
<td>Minister, statesman</td>
<td>astronomical and astrological sign for Jupiter, a sign of domination of the elements and the power of organization</td>
</tr>
<tr>
<td>Monk</td>
<td>three-bead segment of a rosary</td>
</tr>
<tr>
<td>Musician</td>
<td>eighth-note</td>
</tr>
<tr>
<td>Noble, valiant, etc.</td>
<td>heart</td>
</tr>
<tr>
<td>Orator, preacher</td>
<td>astronomical and astrological sign: Mercury (god of rhetoric); then dotted sign of Mercury</td>
</tr>
<tr>
<td>Painter</td>
<td>cinquefoil rose, usually associated with beauty</td>
</tr>
<tr>
<td>Philosopher, sage</td>
<td>eyeglasses (dotted for a philosopher; undotted for a sage); or, possibly, the alchemical sign for sublimation</td>
</tr>
<tr>
<td>Poet</td>
<td>lyre</td>
</tr>
<tr>
<td>Poisoned person</td>
<td>vial with top down</td>
</tr>
<tr>
<td>Poisoner</td>
<td>vial with top up</td>
</tr>
<tr>
<td>Prisoner</td>
<td>alchemical sign for iron vitriol</td>
</tr>
<tr>
<td>Prophet</td>
<td>five-pointed star pointing upwards, traditionally associated with the spiritual</td>
</tr>
<tr>
<td>Punished with death</td>
<td>convolute; convolute with horizontal line</td>
</tr>
<tr>
<td>Rebel</td>
<td>circle struck through</td>
</tr>
<tr>
<td>Restored</td>
<td>astronomical and astrological sign for Saturn, who was restored to power</td>
</tr>
<tr>
<td>Rich, greedy</td>
<td>crescent moon (the moon was a token of changeableness, cf. Ripa, fig. 155)</td>
</tr>
<tr>
<td>Republic</td>
<td>two hands shaking</td>
</tr>
<tr>
<td>Ruin</td>
<td>tongue of fire from a bell (earth?)</td>
</tr>
<tr>
<td>Saint</td>
<td>Greek cross</td>
</tr>
<tr>
<td>Savant</td>
<td>outline of an armillary sphere, the symbol of learning</td>
</tr>
<tr>
<td>Sailor</td>
<td>anchor</td>
</tr>
<tr>
<td>Scrupulous person, superstititious</td>
<td>pharmaceutical sign for scruple</td>
</tr>
</tbody>
</table>

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