almost equally cold upper stratum of air from the equator toward the poles, designate an important epoch in the history of our physical knowledge.

If, on the one hand, accidental observations, having a wholly unscientific origin, favored this knowledge in the suddenly enlarged spheres of natural investigation, the age we are describing was, on the other hand, from an unfortunate combination of circumstances, singularly deficient in the advantages arising from a purely scientific impulse. Leonardo da Vinci, the greatest physicist of the fifteenth century, who combined an enviable insight into nature with distinguished mathematical knowledge, was the cotemporary of Columbus, and died three years after him. Meteorology, as well as hydraulics and optics, had occupied the attention of this celebrated artist. The influence which he exercised during his life was made manifest by his great works in painting, and by the eloquence of his discourse, and not by his writings. Had the physical views of Leonardo da Vinci not remained buried in his manuscripts, the field of observation opened by the new world would in a great degree have been worked out in many departments of science before the great epoch of Galileo, Pascal, and Huygens. Like Francis Bacon, and a whole century before him, he regarded induction as the only sure method of treating natural science ("*dobbiamo cominciare dall' esperienza, e per mezzo di questa scoprirne la regione*").*

As we find, notwithstanding the want of instruments of measurement, that the questions of climatic relations in the tropical mountainous regions—the distribution of heat, the extremes of atmospheric dryness, and the frequency of electric explosions—were frequently discussed in the accounts of the first land journeys, so also it appears that mariners very early acquired correct views of the direction and rapidity of the currents which traverse the Atlantic Ocean, like rivers of very variable breadth. The actual *equatorial current*, the movement of the waters between the tropics, was first described by Columbus. He expresses himself most positively and gener-

* Leonardo da Vinci correctly observes of this proceeding, "questo è il methodo daosservarsi nella ricerca de' fenomeni della natura." See Venturi, *Essai sur les Ouvrages Physico-mathematiques de Leonardo da Vinci*, 1797, p. 31; Amoretti, *Memorie Storiche sù la Vita di Lionardo da Vinci*, Milano, 1804, p. 143 (in his edition of *Trattato della Pittura*, t. xxxiii. of the Classici Italiani); Whewell, *Philos. of the Inductive Sciences*, 1840, vol. ii., p. 368–370; Brewster, *Life of Newton*, p. 332. Most of Leonardo da Vinci's physical works bear the date of the year 1498.