

ined empirically the position of the magnetic south pole; and since my honored friend, the great mathematician, Frederic Gauss, has succeeded in establishing the first general theory of terrestrial magnetism, we need not renounce the hope that the many requirements of science and navigation will lead to the realization of the plan I have already proposed. May the year 1850 be marked as the first normal epoch in which the materials for a magnetic chart shall be collected; and may permanent scientific institutions (academies) impose upon themselves the practice of reminding, every twenty-five or thirty years, governments favorable to the advance of navigation, of the importance of an undertaking whose great cosmic importance depends on its long-continued repetition.

The invention of instruments for measuring temperature (Galileo's thermoscopes of 1593 and 1602,* depending simultaneously on the changes in the temperature and the external pressure of the atmosphere) gave origin to the idea of determining the modifications of the atmosphere by a series of connected and successive observations. We learn from the *Diario dell' Accademia del Cimento*, which exercised so happy an influence on the taste for experiments, conducted in a regular and systematic method during the brief term of its activity, that observations of the temperature were made with spirit thermometers similar to our own at a great number of stations, among others at Florence, in the Convent Degli Angeli, in the plains of Lombardy, on the mountains near Pistoja, and even in the elevated plain of Innsbruck, as early as 1641, an five times daily.† The Grand-duke Ferdinand II. employed the monks in many of the monasteries of his states to perform this task.‡ The temperature of mineral springs was also determined at that period, and thus gave occasion to many ques-

* On the oldest thermometers, see Nelli, *Vita e Commercio Letterario di Galilei* (Losanna, 1793), vol. i., p. 68-94; *Opere di Galilei* (Padova, 1744), t. i., p. lv.; Libri, *Histoire des Sciences Mathématiques en Italie*, t. iv. (1841), p. 185-197. As evidences of first comparative observations on temperature, we may instance the letters of Gianfrancesco Sagredo and Benedetto Castelli in 1613, 1615, and 1633, given in Venturi, *Memorie e Lettere inedite di Galilei*, Part i., 1818, p. 20.

† Vincenzo Antinori, in the *Saggi di Naturali Esperienze, fatte nell' Accademia del Cimento*, 1841, p. 30-44.

‡ On the determination of the thermometric scale of the Accademia del Cimento, and on the meteorological observations continued for sixteen years by a pupil of Galileo, Father Raineri, see Libri, in the *Annales de Chimie et de Physique*, t. xlv., 1830, p. 354; and a more recent similar work by Schouw, in his *Tableau du Climat et de la Végétation de l'Italie*, 1839, p. 99-106.