laterally by one another, *i. e.*, in almost equal degrees of latitude. Our own continent, and the temperate parts of North America, generally present such contrasts of temperature. When our winters are severe, the season there is mild, and conversely. These compensations in the local distribution of heat, when associated with vicinity to the ocean, are attended by the most beneficial results to mankind, owing to the indubitable influence exercised by the mean quantity of summer heat on the development of vegetation, and consequently on the ripening of the cereals.

While William Herschel attributed an increase of heat on the Earth to the activity of the central body—a process from which result spots on the Sun—Batista Baliani, almost two and a half centuries earlier, in a letter to Galileo, described solar spots as cooling agents.* This opinion coincides with the experiment made by the zealous astronomer Gautier† at Geneva, in comparing four periods characterized by numerous and by few spots on the Sun's disk (from 1827 to 1843), with the mean temperatures presented by thirty-three European and twenty-nine American stations of similar latitude. This comparison proves, by positive and negative differences, the contrasts exhibited by opposite Atlantic coasts. The final results, however, scarcely give 0·76° Fahr. as the cooling force ascribed to the Sun's spots, and this might with equal propriety be attributed to errors of observation and the direction of the winds at the localities indicated.

It still remains for us to notice the *third envelope* of the Sun, to which we have already referred. This is the most external of the three, inclosing the photosphere, is cloudy, and of imperfect transparency. The remarkable phenomena of

* We find a reference in the historical fragments of the elder Cato to an official notice of the high price of corn, and an obscuration of the Sun's disk, which continued for many months. The "*luminis caligo*" and "*defectus Solis*" of Roman authors does not invariably indicate an eclipse of the Sun; as, for instance, in the account of the long-continued diminution of the Sun's light after the death of Cæsar. Thus, for instance, we read in Aulus Gellius, *Noct. Att.*, ii., 28, "Verba Catonis in Originum quarto hæc sunt: non libet scribere, quod in tabula apud Pontificem maximum est, quotiens anona cara, quotiens Lunæ an Solis lumini caligo, aut quid obstiterit." "The words of Cato in the fourth book of his *Origines* are these: I may not write what is frequently entered in the tables of the priests, that corn was dear whenever there was any decrease in the light of the Sun and Moon, or when any thing obscured them."

† Gautier. *Recherches relatives à l'Influence que le nombre des taches Solaires exerce sur les températures Terrestres*, in the *Bibliothèque Universelle de Genève*, Nouv. Série, tom. li., 1844, p. 327–335.