

Southern lights have often been seen in England by the intelligent and indefatigable observer Dalton, and northern lights have been observed in the southern hemisphere as far as 45° latitude (as on the 14th of January, 1831). On occasions that are by no means of rare occurrence, the equilibrium at both poles has been simultaneously disturbed. I have discovered with certainty that northern polar lights have been seen within the tropics in Mexico and Peru. We must distinguish between the sphere of simultaneous visibility of the phenomenon and the zones of the Earth where it is seen almost nightly. Every observer no doubt sees a separate Aurora of his own, as he sees a separate rainbow. A great portion of the Earth simultaneously engenders these phenomena of emanations of light. Many nights may be instanced in which the phenomenon has been simultaneously observed in England and in Pennsylvania, in Rome and in Peking. When it is stated that Auroras diminish with the decrease of latitude, the latitude must be understood to be magnetic, and as measured by its distance from the magnetic pole. In Iceland, in Greenland, Newfoundland, on the shores of the Slave Lake, and at Fort Enterprise in Northern Canada, these lights appear almost every night at certain seasons of the year, celebrating with their flashing beams, according to the mode of expression common to the inhabitants of the Shetland Isles, "a merry dance in heaven."* While the Aurora is a phenomenon of rare occurrence in Italy, it is frequently seen in the latitude of Philadelphia ($39^{\circ} 57'$), owing to the southern position of the American magnetic pole. In the districts which are remarkable, in the New Continent and the Siberian coasts, for the frequent occurrence of this phenomenon, there are special regions or zones of longitude in which the polar light is particularly bright and brilliant.† The exist-

of Buchtarminsk, so similarly developed, that we must regard the influences producing it as very widely distributed, and as depending on general natural forces. See the important observations of Kämtz (*Vorlesungen über Meteorologie*, 1840, s. 146), and the more recent ones of Martins and Bravais (*Météorologie*, 1843, p. 117). In south polar bands, composed of very delicate clouds, observed by Arago at Paris on the 23d of June, 1844, dark rays shot upward from an arch running east and west. We have already made mention of black rays, resembling dark smoke, as occurring in brilliant nocturnal northern lights.

* The northern lights are called by the Shetland Islanders "the merry dancers." (Kendal, in the *Quarterly Journal of Science*, new series, vol. iv., p. 395.)

† See Muncke's excellent work in the new edition of Gehler's *Physik. Wörterbuch*, bd. vii., i., s. 113-268, and especially s. 158.