

is not found to be changed during the most intense Aurora ; but, on the other hand, the three expressions of the power of terrestrial magnetism, declination, inclination, and intensity, are all affected by polar light, so that in the same night, and at different periods of the magnetic development, the same end of the needle is both attracted and repelled. The assertion made by Parry, on the strength of the data yielded by his observations in the neighborhood of the magnetic pole at Melville Island, that the Aurora did not disturb, but rather exercised a calming influence on the magnetic needle, has been satisfactorily refuted by Parry's own more exact researches,\* detailed in his journal, and by the admirable observations of Richardson, Hood, and Franklin in Northern Canada, and lastly by Bravais and Lottin in Lapland. The process of the Aurora is, as has already been observed, the restoration of a disturbed condition of equilibrium. The effect on the needle is different according to the degree of intensity of the explosion. It was only unappreciable at the gloomy winter station of Bosekop when the phenomenon of light was very faint and low in the horizon. The shooting cylinders of rays have been aptly compared to the flame which rises in the closed circuit of a voltaic pile between two points of carbon at a considerable distance apart, or, according to Fizeau, to the flame rising between a silver and a carbon point, and attracted or repelled by the magnet. This analogy certainly sets aside the necessity of assuming the existence of metallic vapors in the atmosphere, which some celebrated physicists have regarded as the substratum of the northern light.

When we apply the indefinite term *polar light* to the luminous phenomenon which we ascribe to a galvanic current, that is to say, to the motion of electricity in a closed circuit, we merely indicate the local direction in which the evolution of light is most frequently, although by no means invariably, seen. This phenomenon derives the greater part of its importance from the fact that the Earth becomes *self-luminous*, and that as a planet, besides the light which it receives from the central body, the Sun, it shows itself capable in itself of developing light. The intensity of the terrestrial light, or, rather, the luminosity which is diffused, exceeds, in cases of the brightest colored radiation toward the zenith, the light of the Moon in its first quarter. Occasionally, as on the 7th of January, 1831, printed characters could be read without difficulty. This almost uninterrupted development of light

\* Kämtz, *Lehrbuch der Meteorologie*, bd. iii., s. 498 und 501.