

lar or irregular manifestation of the terrestrial force is detected by uninterrupted and simultaneous observations. A variation

cially at the times of the solstices and equinoxes, from hour to hour, and often from half hour to half hour, for five or six days and nights uninterruptedly. I had persuaded myself that continuous and uninterrupted observations of several days and nights (*observatio perpetua*) were preferable to the single observations of many months. The apparatus, a Prony's magnetic telescope, suspended in a glass case by a thread devoid of torsion, allowed angles of seven or eight seconds to be read off on a finely-divided scale, placed at a proper distance, and lighted at night by lamps. Magnetic perturbations (storms), which occasionally recurred at the same hour on several successive nights, led me even then to desire extremely that similar apparatus should be used to the east and west of Berlin, in order to distinguish general terrestrial phenomena from those which are mere local disturbances, depending on the inequality of heat in different parts of the Earth, or on the cloudiness of the atmosphere. My departure to Paris, and the long period of political disturbance that involved the whole of the west of Europe, prevented my wish from being then accomplished. Ersted's great discovery (1820) of the intimate connection between electricity and magnetism again excited a general interest (which had long flagged) in the periodical variations of the electro-magnetic tension of the Earth. Arago, who many years previously had commenced in the Observatory at Paris, with a new and excellent declination instrument by Gambey, the longest uninterrupted series of horary observations which we possess in Europe, showed, by a comparison with simultaneous observations of perturbation made at Kasan, what advantages might be obtained from corresponding measurements of declination. When I returned to Berlin, after an eighteen years' residence in France, I had a small magnetic house erected in the autumn of 1828, not only with the view of carrying on the work commenced in 1806, but more with the object that simultaneous observations at hours previously determined might be made at Berlin, Paris, and Freiburg, at a depth of 35 fathoms below the surface. The simultaneous occurrence of the perturbations, and the parallelism of the movements for October and December, 1829, were then graphically represented. (Pogg., *Annalen*, bd. xix., s. 357, taf. i.-iii.) An expedition into Northern Asia, undertaken in 1829, by command of the Emperor of Russia, soon gave me an opportunity of working out my plan on a larger scale. This plan was laid before a select committee of one of the Imperial Academies of Science, and, under the protection of the Director of the Mining Department, Count von Cancrin, and the excellent superintendence of Professor Kupffer, magnetic stations were appointed over the whole of Northern Asia, from Nicolajeff, in the line through Catharinenburg, Barnaul, and Nertschinsk, to Pekin.

The year 1832 (*Göttinger gelehrte Anzeigen*, st. 206) is distinguished as the great epoch in which the profound author of a general theory of terrestrial magnetism, Friedrich Gauss, erected apparatus, constructed on a new principle, in the Göttingen Observatory. The magnetic observatory was finished in 1834, and in the same year Gauss distributed new instruments, with instructions for their use, in which the celebrated physicist, Wilhelm Weber, took extreme interest, over a large portion of Germany and Sweden, and the whole of Italy. (*Resultate der Beob. des Magnetischen Vereins im Jahr 1838*, s. 135, and Poggend., *Annalen*,