

phenomena of the Polar Lights themselves, especially those which are susceptible of precise measurement and instrumental observation, conspire to verify Faraday's suggestion as to their immediate nature and cause. That they are truly electrical in their nature, an inference rendered so probable by their obvious phenomena, Mr. Brayley considered to be proved by their (electro-magnetic inductive) effects on the magnetic elements; nothing hitherto known having the power of producing such effects but magnetism itself, and electricity, while no phenomena of the former are luminous,—there is no magnetic light;—and the absence of atmospheric electricity during the display of the aurora, paradoxical as it may seem, is a necessary consequence, the electricity being absorbed, as it were, by its conversion into the correlate magnetism, or, in other words, ceasing to be statically manifested while being dynamically exerted. Some experimental illustrations of the electrical nature of the Polar Lights were then exhibited, in which the luminous disruptive discharge was taken in exhausted tubes, that is, in excessively rare media, resembling in their attenuation the atmosphere itself, at the elevations where the aurora occurs; one of the tubes, prepared by M. Gassiot, showing the stratified discharge, (originally obtained by Mr. Grove,) recently cited by Humboldt in evidence that the dark spaces in the Aurora may be real, and not merely the effect of contrast. The source of the electricity in these experiments being the apparatus termed the Ruhmkorff coil, the close accordance between them and the natural phenomena was pointed out, in the fact that the electricity was obtained by a process of magneto-electric induction, exactly analogous, on the small scale, to the natural process to which, operating in the globe itself, Faraday has referred the electricity manifested in the Polar Lights. The actual influence of the Aurora on the magnetic elements was exemplified by three photographs from the self-registering apparatus at the Kew Observatory, on which the vertical, the horizontal, and the total-force magnetometers, respectively, had recorded the disturbances produced in them by the Aurora of December 3, 1858. The facts establishing the participation of the Polar Lights in the great law of solar periodicity which it had been the object of the lecturer thus generally to explain, were then briefly stated; and the conclusion was deduced, that the relation of the periodicity to the electrical causation of the Polar Lights, is simply this,—that the magnetic action of the Sun periodically affects the terrestrial magnetism, which, being converted into electricity by the earth's rotation and moving conductors, agreeably to the theory maintained, exhibits the period in the polar discharges of that electricity.

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## MISCELLANEOUS.

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### CHINESE RIVERS.

At a recent meeting of the Geographical Society of London, one of the papers read was entitled "Notes of a Voyage up the Yang-tse-Keang, from Wosung to Han-kow, by Lawrence Oliphant, Esq., Secretary to the Earl of Elgin. With a Chart of the River, by Capt. Sherard Osborn, R.N., in command of Her Majesty's Ship *Furious*." We borrow the following abstract of it from the report furnished to the Athenæum :—The author commented on the importance of the voyage of the Earl of Elgin, in a political, commercial, and geographical sense, and observed