On an Optical Phenomenon Observed in July, 1856, while on a Voyage to Havre
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February 11th, 1856.

SIR ROBERT KANE, Vice-President, in the Chair.

Samuel Downing, Esq., and James West, Esq., High Sheriff of the City of Dublin, were elected Members of the Academy.

Mr. Hennessy described an optical phenomenon which he observed on the 3rd of last July in the Atlantic, while on a voyage to Havre. It was a coloured glory, such as has been already minutely described by other observers, especially Scoresby and Saussure, but this instance was particularly remarkable from the conditions that accompanied it, and which pointed in a decisive manner to the true theoretical explanation of such phenomena. The day when this glory was observed was remarkably sultry, and the sea, which was perfectly smooth, was covered with scattered patches of fog. At $4\frac{1}{2}$ p.m. Mr. Hennessy's attention was directed to a bank of fog close to the vessel, and in the direction exactly opposite to the sun. Three rings, sensibly concentric, were distinctly visible in the fog bank: the first or outermost was nearly pure white; the second presented faint traces of prismatic colours; and the third, which had a diameter considerably less than the others, showed a series of brilliant colours, namely, violet, red, yellow, green, and blue. As usual, the centre of this ring contained a very distinct shadow of the observer's head. The production of these rings could not be ascribed as the influence of minute icy crystals floating in the fog, as has been frequently supposed, but must be attributed to the optical action of the vesicles of vapour, for the temperature of the air over the sea, upon which the fog bank rested, was that of a warm summer afternoon, and very considerably above the freezing point.

By permission of the Chairman, Mr. Hennessy explained some results at which he had arrived since the last meeting of the Academy, relative to the influence of latitude on the positions of the isothermal lines at the surface of the earth. Setting out from the general laws of radiant heat, he had arrived at a mathematical expression for the quantity of solar heat received at a limited area of the earth's surface, which depends on an elliptic function whose modulus is the sine of the inclination of the equator to the ecliptic. From this he was able to deduce the theorem already announced as to the transportation of the closed isothermal lines of an island towards the pole, by introducing the influence of latitude. It follows also, that the isothermal lines will be crowded more closely together towards the poles. He has found that the parallel of either hemisphere, which receives the greatest amount of heat from direct solar radiation, while the sun is at the same side of the equator, has a latitude of 7° 24′.

Rev. Dr. Graves read a paper on the extension of Taylor's theorem to non-commutative symbols.

The Secretary read extracts of a letter from Mr. James Gilmour, of Coleraine, explaining the exact locality where the ancient gold fibula, called the Dalraida brooch in the Ulster Journal of Archæology, No. 13, was found. He also stated that Dr. Aquilla Smith had ascertained its specific gravity to be 15·45, and not 16·248. By permission of Mr. Gilmour, the brooch was exhibited.

Dr. Petrie made some remarks on the ornamentation of the brooch, and explained that it was chiefly interesting as being made of gold, and gave it as his opinion that it could not be earlier than the end of the eleventh or beginning of the twelfth century.