Winter Observations on the Shadow of the Peak of Tenerife, with a new Method for measuring approximately the Diameter of the Earth

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the primary coil and one terminal of the interrupter, so as to include both of them between its terminals. The primary consists of 5 turns of copper strip. The secondary has 2000 turns of thick wire. The supply current, about half an ampere, may be taken from the electric-light mains at almost any voltage from 50 to 200, direct or alternating.

DISCUSSION.

Prof. LODGE said that he believed Sir W. Crookes had found it work quite well at 10 volts. He pointed out also that if the straight discharge rods at the spark-gap were free to slide, the discharge drove them back into their sockets.

Prof. FITZGERALD said it was stated at Toronto that the spark was broken at the interrupter when the condenser was charged, and that by the time the condenser was ready to discharge, the contact at the interrupter had been made again. It had seemed to him at first that the condenser discharges and surgings must take place at a rate far higher than the period of the mechanical movement of the interrupter ; but he perceived afterwards that it was not so.

Prof. HERSCHEL asked if such an apparatus was suitable for work with Röntgen rays.

Dr. THOMPSON, in reply, congratulated Mr. Tesla upon the perfect working and compactness of his invention. The present form was not suited for Röntgen ray experiments, with ordinary focus-tubes, but Mr. Tesla had designed a special tube that was excellent for that purpose.

XII. *Winter Observations on the Shadow of the Peak of Tenerife, with a new Method for measuring approximately the Diameter of the Earth.* By Rev. T. C. PORTER, M.A.*

[Abstract.]

THE method consists in observing the shadow cast by the Peak upon the sea, and measuring the time that elapses between the moment when the apex of the shadow touches

* Read February 26, 1898.

the sea-horizon, and the instant when it is eclipsed by the shadow of night.

The author calls attention to a phenomenon hitherto unnoticed, *i. e.*, that the heated air ascending from the Peak casts a shadow, seen as a faint prolongation of that of the Peak, rising obliquely from its apex. A photograph was exhibited, taken on a quarter-plate, in which is visible the curvature of the horizon as viewed from the altitude of the Peak.

An interesting series of photographs, illustrating the conformation of the Peak and the phenomena of sunrise and twilight in that latitude, was also shown. In regard to twilight, it is noticed that the first approach of night, as observed looking eastward, is marked by a dark border of about five degrees width, followed by a sky somewhat lighter.

XIII. *A new Theory of Geysers.*

By Rev. T. C. PORTER, M.A.*

[Abstract.]

THE theories of Bunsen and others fail to explain why the geyser throat appears almost completely full at the end of an eruption. This immediate re-filling is the more remarkable when it is remembered that some of the geysers of the Yellowstone region discharge a million and a half gallons at each eruption, and that the eruptions may occur at five-minute intervals. Moreover, the theories generally accepted assume steeper temperature-gradients than those in a region like Yellowstone. The author suggests that the phenomena are better explained on the assumption of an arrangement of strata such as exists in artesian-well districts; the throat or shaft of the geyser being in the position of a well communicating with a subterranean stream—the “tube” of the geyser. From the disturbed nature of the region, the tube of the geyser probably follows a waved course. The “shaft”

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