tive place having its own particular pole, the revolving motion of which is regulated by some general but hitherto unknown law.

May 16, 1833.

HIS ROYAL HIGHNESS THE DUKE OF SUSSEX, K.G., President, in the Chair.

A paper was read, entitled, "Note on a Paper by Dr. John Davy, entitled, 'Notice on the Remains of the recent Volcano in the Mediterranean.'" By Charles Daubeny, M.D., F.R.S., Professor of Chemistry in the University of Oxford.

From the circumstance that azotic gas is frequently evolved from thermal springs, the author infers that this phenomenon is in some way connected with volcanic action; and this he considers to be the case in the instance observed by Dr. Davy, although referred by him to the decomposition of atmospheric air during putrefactive processes going on at the bottom of the sea. Dr. Daubeny offers objections to the theory of that gas rising to the surface in consequence of the high temperature to which it has been subjected. He conceives that the air which Dr. Davy examined cannot have been derived from sea-water, but must have originated from the atmosphere itself, with which the volcano communicated. The author is disposed to attach great importance to the accurate examination of the gases given out by warm springs, and recommends the prosecution of the inquiry.

A paper was also read, entitled, "Experimental Researches on Atomic Weights." By Edward Turner, M.D., F.R.S. Lond. and Edinb., Professor of Chemistry in the University of London.

This paper is a continuation of the Essay, by the same author, on the Composition of the Chloride of Barium, which was published in the Philosophical Transactions for 1829. Having shown that the atomic weights current among British chemists, though in some instances correct, or tolerably approximative, have, as a whole, been adopted on insufficient evidence, he proceeds, in this paper, to give an account of the experiments he has made to ascertain the equivalent numbers for lead, chlorine, silver, barium, and nitrogen. Finding, with reference to lead, that the method adopted by Berzelius did not afford uniform results, he endeavoured to ascertain the quantity of subsulphate of lead which given weights of metallic lead and the protoxide of that metal respectively produce. He details the mode he employed for the conversion of metallic lead into the subsulphate by a mixture of nitric and sulphuric acids, diluted with an equal bulk of water, and the precautions he adopted to avoid loss. The mean of three experiments gave 146·375 grains of sulphate of lead for 100 grains of metallic lead. By the mean of four experiments, Berzelius had obtained, instead of the former number, 146·419. Dr. Turner adopts the mean of the whole, namely, 146·41. By prosecuting this inquiry,

he finds the sulphate to consist of 73·575 of protoxide of lead, and 26·425 of sulphuric acid; and that the former contains 5·274 of oxygen. According to these results, the equivalent number for lead is 103·6.

By experiments with the chloride of lead, which gave very uniform results, Dr. Turner obtained an equivalent number for chlorine, closely agreeing with that calculated from the analysis of chlorate of potash in the experiments of Berzelius, namely, 35·45, but totally inconsistent with the atomic weight assigned to it by British chemists. The accuracy of this result was further confirmed by a careful comparative analysis of the binoxide and bichloride of mercury.

The author next endeavoured to determine the equivalent number for silver, by the analysis of its oxide and sulphuret, but could not arrive at any precision in his results. The equivalent number for barium may be calculated from his analysis of the chloride already published in the paper before alluded to. His investigation of the equivalent of nitrogen was attempted by means of the analysis of the nitrates of silver, of lead, and of baryta; the mean result of which gives 14·15, agreeing very nearly with that assigned by Berzelius. His investigation of the atomic weight of sulphur is not yet completed; but he details several previous steps in this inquiry, which he intends to prosecute on a future occasion. He estimates the equivalent of mercury at 202; a number which he considers as a close approximation.

He concludes by various remarks on the inconsistency with experiment, which is apparent in many of the numbers adopted as chemical equivalents by British chemists; and on the inaccuracy of those numbers which have been employed as elements in calculating the equivalents of nearly all the other elementary substances. The author thinks that Dr. Prout's hypothesis, as advocated by Dr. Thomson, that all atomic weights are simple multiples of that of hydrogen, can no longer be maintained, and that it is at variance with the most exact analytical researches.

May 23, 1833.

HIS ROYAL HIGHNESS THE DUKE OF SUSSEX, K.G., President, in the Chair.

A paper was read, entitled, "Observations of the Comet of Encke, made in June 1832." By Thomas Henderson, Esq., His Majesty's Astronomer at the Cape of Good Hope. Communicated, by Command of the Lords Commissioners of the Admiralty, by Captain Beaufort, R.N., F.R.S., Hydrographer to the Admiralty.

Most of the observations recorded in this paper were made by a circular micrometer constructed by Simms, and applied to an achromatic telescope of Dollond's, 45 inches in focal length, and 3·5 inches aperture, furnished with a portable equatorial stand, capable of being adjusted to any latitude. The magnifying power was about 30, and the radius of the ring was an arc of 1015 seconds. In other observa-