

quantities occurring in logarithmic formulæ, and series expressing circular arcs, are given by the author. By considering all quantity as affirmative *per se*, and admitting *plus* and *minus* merely as correlative terms, we thus succeed in banishing mystery and paradox from the science most powerful in eliciting truth, and where they ought least to find a place.

November 25.

DAVIES GILBERT, Esq. President, in the Chair.

The following Presents were received, and thanks ordered for them :—

Transactions of the Plymouth Institution. 8vo.—*Presented by the Institution.*

Illustrations of Indian Zoology; consisting of coloured Plates of new, or hitherto unfigured, Indian Animals, from the collection of Major-general Hardwicke, F.R.S. Selected and arranged by John Edward Gray. folio.—*John E. Gray, Esq.*

Monthly Notice of the Proceedings of the Astronomical Society. No. 29. 8vo.—*The Society.*

Ireland and its Economy; being the result of Observations made in a Tour through the Country in the Autumn of 1829. By James E. Bicheno, Esq. F.R.S. 8vo.—*The Author.*

The Elements of the Theory of Mechanics. By the Rev. Robert Walker, M.A. 8vo.—*The Author.*

The London Literary Gazette. No. 722. 4to.—*The Proprietors.*

An Engraved Portrait of John Dalton, Esq. F.R.S.—*Joseph Allen, Esq.*

Mémoires présentés par divers Savans à l'Académie Royale des Sciences de l'Institut de France, et imprimés par son ordre. (Sciences Mathématiques et Physiques.) Tome deuxième. 4to. 1830.—*The Academy.*

Astronomische Beobachtungen auf der Königl. Universitäts-Sternwarte in Königsberg. 13 u. 14 Abtheilungen. Von F. W. Bessel, Ritter, u. s. w. folio.—*Professor Bessel, Foreign Memb. R.S.*
Annalen der K. K. Sternwarte in Wien. Nach dem Befehle Seiner Majestät, auf Oeffentliche Kosten, herausgegeben. Von J. J. Littrow und Lambert Mayer. Zehnter Theil. folio.—*Professor Littrow.*

A Paper was read, entitled, "On a simple electro-chemical method of ascertaining the presence of different metals; applied to detect minute quantities of metallic poisons." By Edmund Davy, Esq. F.R.S., M.R.I.A., and Professor of Chemistry to the Royal Dublin Society.

The Voltaic arrangement employed by the author consisted merely of small slips of different metals, generally zinc and platina, placed in contact and forming a galvanic circuit with the inter-

posed fluid suspected to contain the poisonous metal; in which case, as was formerly shown by Sir H. Davy in his Bakerian lecture, the metal held in solution is deposited in the form of crystals, on the negative surface. The zinc was usually employed in the form of foil; the platina was, in some cases, a small crucible, or a spatula; but more frequently platina foil was used. It is generally necessary to mix a few drops of acid with the metallic compounds that are subjected to this test, and that are placed in contact with the platina: on applying the zinc foil, the platina will soon become coated with the reduced metal.

The author then enters into the detail of his experiments on the efficacy of his method in the detection of arsenic, mercury, lead and copper, in their different states of oxidation and saline combinations; and of the precautions necessary to be observed in the case of each metal. He was enabled to detect the presence of arsenic, by the exhibition of its characteristic properties, when only the 500th part of a grain of that metal was deposited on the platina; and in some instances could appreciate the 2500th part of a grain, by the application of appropriate tests.

The author next ascertained that the electro-chemical method is competent to the detection of very minute quantities of the different metals, when their compounds are mixed with various vegetable and animal substances. Thus, the presence of arsenic would readily be discovered when mixed with all the ordinary articles of diet,—such as wheaten flour, bread, starch, rice, potatoes, peas, soup, sugar, vinegar, gruel, tea, milk, eggs, gelatine, and various kinds of wine; also when mixed with the principal secretions of the alimentary canal, as bile and saliva. Arsenious acid mixed with butter, lard and oils, or with sheep's blood, or ox bile, was detected with great ease. Similar results were afforded by corrosive sublimate, the acetate of lead, and sulphate of copper, added in small quantity to the most complicated mixtures of organic substances. In some instances where the common tests do not act at all, or only act fallaciously, the electro-chemical method acts with the greatest certainty.

Anniversary Meeting, Nov. 30th.

DAVIES GILBERT, Esq. President, in the Chair.

On this occasion the President delivered the following Address:

Gentlemen,

Having now, for the last time, to address you in reference to the loss of eminent persons sustained by the Society in the preceding year, I cannot but congratulate you on the difference between the list now read, and that which we had the misfortune to hear twelve months ago. Several individuals of great distinction, of extensive acquirements and of splendid talents, are undoubtedly brought before us on the present occasion: but advanced age or long absence from