

address concludes with a notice of the rocks of Brittany and the Channel Isles, which have attracted the attention of more than one author.

CAMBRIDGE.

Philosophical Society, February 26.—Prof. Hughes, President, in the chair.—The following communications were made:—On current-sheets, specially on ellipsoids and anchor-rings, by Mr. R. H. D. Mayall. The electric currents induced in thin uniformly conducting sheets of any shape placed in a variable magnetic field were considered; and it was shown that they could be determined by the solution of a differential equation of the second order with the aid of the appropriate boundary conditions. Orthogonal curvilinear co-ordinates were used in every case, the equation to the surface of the conductor being got by making one co-ordinate constant. In this way results were worked out for the infinite plane, the sphere, the infinite right circular cylinder, and the ellipsoid with three unequal axes. The case of the anchor-ring was also discussed, and a set of linear equations found to determine the unknown coefficients in the expression for the current function. These were solved for the particular case when the exciting disturbance was represented by a harmonic of the first degree and symmetrical about the axis of the ring; and a simple expression was found for the modulus of decay of free currents of the same type.—The complete system of quaternarians for any degree, by Mr. D. B. Mair. A method is given for finding the concomitants of a quaternary form of any degree or of simultaneous quaternary forms. The cases of a single quadratic, a single cubic, a single quartic, a system of two quadratics, and a system of three quadratics, are treated at length.—The configuration of a pair of equal and opposite hollow straight vortices, of finite cross-section, moving steadily through a fluid, by Mr. H. C. Pocklington.—On a class of definite integrals connected with Bessel's functions, by Mr. A. B. Basset.

PARIS.

Academy of Sciences, February 26.—M. Lœwy in the chair.—On the scientific work of Jean Louis Armand de Quatrefages de Bréau, by M. Edmond Perrier.—On the equation of the vibrations of a membrane, by M. H. Poincaré.—On a way of obtaining a uniform circular movement by means of two vibratory movements, by M. Marcel Deprez.—Observations of the new planet AV (Courty, 1894, February 11), made at the Paris Observatory, by MM. O. Callandreau and G. Bigourdan.—On the application of the method of successive approximations to the ordinary differential equations of the first order, by M. Ernest Lindelöf.—Observations on the preceding communication, by M. Émile Picard.—The combustion of the ordinary ballistic explosives, by M. P. Vieille. The old black and brown powders do not show combustion by parallel surfaces, whereas the new colloidal powders give data satisfying exactly the criterion of combustion by parallel surfaces.—On the fundamental laws of heat, by M. G. Mouret. The three laws concerning,—the conservation of entropy in reversible operations, the conservation of heat in conduction, and the increase of entropy in irreversible operations, appear to be fundamental laws of heat, and not derivable from a more general law.—On a means of compensating the E.M.F. of a hydro-electric pile, by M. J. Schürr.—Measurement of the difference of phase between two alternating sinusoidal currents of the same period, by M. Albert Hess.—Action of heat on the double nitrites of metals of the alkali group and metals of the platinum group: ruthenium compounds, by MM. A. Joly and E. Leidié. The formulae $\text{Ru}_2(\text{NO}_2)_6 \cdot 4\text{KNO}_2$ and $\text{Ru}_2\text{O}(\text{NO}_2)_4 \cdot 8\text{KNO}_2$ are now assigned to the potassium ruthenium nitrites. At 360° - 440° in a vacuum, explosive decomposition occurs of the latter compound, with the production of nitrogen, nitrogen dioxide, potassium nitrite, and an insoluble black substance, $3\text{Ru}_2\text{O}_5 \cdot \text{K}_2\text{O}$. The preparation and properties of the sodium compounds, $\text{Ru}_2(\text{NO}_2)_6 \cdot 4\text{NaNO}_2 + 4\text{H}_2\text{O}$ and $\text{Ru} \cdot \text{NO} \cdot \text{Cl}_3 \cdot 2\text{NaCl}$ are described. The former yields the compound $\text{Na}_2\text{O} \cdot 3\text{Ru}_2\text{O}_9$ on heating in sulphur or mercury vapours; at a red heat RuO_2 is produced.—On the isomerism of the nitrobenzoic acids, by M. Céchsnier de Coninck. A study of the relative solubilities of the ortho-, meta-, and para-nitrobenzoic acids in distilled water, dilute alcohol, ether, benzene, light petroleum, carbon bisulphide, and chloroform is given.—On some derivatives of the oxazine and eurhodine series, by M. Charles Lauth.—Analysis of a damaged cheese; extraction of a new ptomaine, by M. Charles Lepierre. A well-crystallised base of the formula

$\text{C}_{16}\text{H}_{24}\text{N}_2\text{O}_4$ has been isolated. It is bitter, inodorous, slightly acid to phthalein, soluble in alcohol but hardly soluble in water, and gives the usual alkaloid reactions but does not yield a tannin precipitate. Its specific rotatory power $[\alpha]_D = +11^\circ 3'$ in water. It causes diarrhoea.—On some laboratory apparatus, by M. André Bidet.—On the odour of benzoic acid (remarks on inodorous substances), by M. Jacques Passy.—Anatomy of the salivary glands of the *Phalantidae*, by M. Bordas.—On the internal characteristics of the grape, and their utilisation in the determination of species and the distinction of hybrids, by M. Gustave Chauveaud.—Artificial reproduction of *avens*, by M. Stanislas Meunier.—The five days' hurricane, from February 8 to 12, 1894, in Bohemia. A letter from M. Ch. V. Zenger to M. A. Cornu.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Books.—Thermodynamics of Reversible Cycles in Gases and Saturated Vapours: Dr. M. I. Pupin (K. Paul).—The Badminton Library—Big Game Shooting, 2 vols.: C. Phillips-Wolley, &c. (Longmans).—Philip's Systematic Atlas: E. G. Ravenstein (Philip).—Nature Pictures for Little People: M. Mawer, &c. (Sunday School Association).—Le Climat de la Belgique en 1893: A. Lancaster (Bruxelles, Hayez).—Man the Primeval Savage: W. G. Smith (Stanford).—Report on North-Western Manitoba: J. B. Tyrrell (Ottawa, Dawson).—Ergebnisse der Meteorologischen Beobachtungen Jahrg. xv. (Hamburg).—A Treatise on Elementary Hydrostatics: J. Greaves (Cambridge University Press).—Joh. Müller's Lehrbuch der Kosmischen Physik und Atlas zu ditto.—Fünfe ungarbeitete und Vermehrte Auflage: Dr. C. F. W. Peters (Braunschweig, Vieweg).—Analytical Geometry for Beginners: Rev. T. G. Vyvyan, Part i (Bell).—Introduction to Elementary Practical Biology: C. W. Dodge (New York, Harper).—Aero-Therapeutics: Dr. C. T. Williams (Macmillan).—Lehrbuch der Petrographie: Dr. F. Zirkel, Zweiter Band (Leipzig, Engelmann).

PAMPHLETS.—The Texan Monsoons: M. W. Harrington (Washington).—Die Tropischen Orkane der Südsee, &c.: E. Knipping (Hamburg).—The Function of Museums, as considered by Mr. Ruskin: W. White.—Meteorology at the Paris Exposition: A. L. Rotch.

SERIALS.—Geological Magazine, March (K. Paul).—Records of the Botanical Survey of India, Vol. i. Nos. 1 and 2 (Calcutta).—American Naturalist, February (Philadelphia).—Botanical Gazette, February (Madison, Wis.).—Geological Journal, March (Stanford).—Observaciones Magnéticas y Meteorológicas del Real Colegio de Belén, Julio-Dic. 1889 (Habana).—Bulletin of the New York Mathematical Society, Vol. 3, No. 5 (New York, Macmillan).—Science Progress, No. 1 (Scientific Press).—Quarterly Journal of Microscopical Science, March (Churchill).

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