case in which the period is so short that the current is confined to an exceedingly thin surface-layer of the core. He has worked out the conditions which obtain with a core and sheath of any forms. The thickness of the layer depends only, other things being equal, upon the period of alternation—the law being that given by Fourier for the penetration of the annual and diurnal heat-waves into the earth's crust. The distribution of density throughout the layer depends upon the form and relative position of the core and the sheath.—Prof. Crum Brown and Dr. James Walker, in continuation of their research on the formation of dibasic acids by electrolysis, communicated a paper on the synthesis of suberic acid and a new acid $(CH_2)_{12}(COOH)_2$.—Prof. Tait exhibited some graphic records of impact, obtained by the method described in a previous paper.—Dr. James Geikie read a paper by Mr. R. Kidston, on the fossil flora of the Potteries coal-field.—The Hon. Lord M'Laren read a paper on the reduction of certain algebraic equations.—Prof. Tait read an account, by Prof. A. C. Mitchell, of a preliminary experiment on the thermal conductivity of aluminium, which he makes out to be almost exactly equal to that of the best copper.—Dr. Ralph Stockman and Mr. D. B. Dott communicated a paper on the pharmacology of morphine and its derivatives.—Dr. W. Somerville made a communication on *Larix europæa* as a breeding-place for *Hylesinus piniperda*.

PARIS.

Academy of Sciences, July 7.—M. Hermite in the chair.—Photographic stellar spectra obtained by MM. Henry at Paris Observatory, by Admiral Mouchez. (See Our Astronomical Column.)—On the oxidation of the sulphur of organic compounds, by MM. Berthelot, André, and Matignon. The authors give a general method for the estimation of sulphur in all organic bodies containing that element, consisting in burning the body either alone or mixed with camphor in an atmosphere of compressed oxygen in the presence of about 10 c.c. of water, with subsequent precipitation of the sulphuric acid in the usual manner.—Heats of combustion of some sulphur compounds, by MM. Berthelot and Matignon.—Heats of combustion of erythrite, arabinose, xylose, raffinose, and inosite, by MM. Berthelot and Matignon.—New experiments on the silent discharge, by M. P. Schutzenberger.—The active elasticity of muscle, and the energy used in its creation in the case of static contraction, by M. A. Chauveau.—Note on the difficulty in recognizing the Cysticerca of *Tænia saginata* or *inermis* in the muscles of the calf and cow, by M. A. Laboulbène.—On the propagation of sound in cylindrical tubes, by M. V. Neyreneuf.—The theory of periodic comets, by M. O. Callandreau. The author finds that the "capture" theory of periodic comets is sufficient to explain the characteristic properties of their orbits and the objections that have been opposed to it.—On a photograph of the ring nebula in Lyra obtained at Bordeaux Observatory, by M. G. Rayet. (See Our Astronomical Column.)—Partial eclipse of the sun of June 17, by M. J. Léotard. The times of first and last contact are given.—Occultation of the double star β Scorpii by the moon on June 29, by the same author.—On the anomalous propagation of waves, by M. Gouy.—Action in the dry way of different arsenates of potassium and sodium on the sesquioxides of some metals, by M. C. Lefèvre.—On a new method of preparing basic nitrate of copper and some crystallized subnitrates, by M. G. Rousseau. The basic nitrates are obtained in large crystals from the hydrates of corresponding neutral salts.—On double bromides of phosphorus and iridium, by M. G. Geisenheimer.—On some chromoiodates, by M. A. Berg.—The artificial production of boracite in the wet way, by M. A. de Gramont.—On the nitroprussides, by M. Prud'homme.—On the cause of the alteration which certain compounds of the aromatic series undergo under the influence of air and light, by M. André Bidet.—Transformation of glucose into sorbite, by M. J. Meunier.—On the hydrogenation of sorbine and the oxidation of sorbite, by MM. Camille Vincent and Delachanal.—Syntheses by means of cyanacetic ether: dicyanacetic ethers, by M. A. Haller.—The preparation of certain ethers by means of fermentation, by M. Georges Jacquemin.—On the physiological action of thallium salts, by Mr. J. Blake.—On the pretended circulatory system and genital organs of Neomenidæ, by M. G. Pruvot.—On the *rôle* of the bud-shaped pedicles of sea-urchins, by M. Henri Prouho.—On the histological constitution of some Nematoids of the order Ascaris, by M. Léon Jammes.—On the comparative physiology of the sense of smell, by M. Raphael Dubois.—The basaltic eruptions of the valley of the Allier, by M. Marcellin Boule.—On the mineralogical composition of the volcanic rocks of the islands of Martinique and Saba, by M. A. Lacroix.—On the relation between joints and some surface wrinklings near Doullens, by M. Henri Lasne.

BERLIN.

Physical Society, June 27.—Prof. von Helmholtz, President, in the chair.—Dr. Dubois spoke on magnetic closed circuits, whose theory constitutes, in addition to hysteresis, the most important advance which magnetism has made in recent times. He gave a short historical review of the more important published works on the subject, pointing out that they were at first the result rather of an endeavour to make the requisite calculations connected with dynamos for technical purposes, and had only attracted the attention of physicists in a secondary and subordinate degree. The works of Faraday, Maxwell, Sir W. Thomson, Hopkinson, Lord Rayleigh, and the experimental researches of Rowland, were briefly mentioned; Hopkinson's formulæ and Lord Rayleigh's graphic representations were then more fully treated; and, finally, the formula for the magnetization of a closed circuit was developed.—Dr. Raps described an arrangement of Topler's mercurial air-pump, by means of which he had made it work automatically; he further described a compensated air-thermometer which he had constructed, and exhibited both instruments to the Society.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

The International Annual of Authony's Photographic Bulletin, vol. 3, 1890-91 (Iliffe).—Reflections on the Motive Power of Heat: N. L. S. Carnot; edited by R. H. Thurston (Macmillan and Co.).—Hypnotism: A. Moll (W. Scott).—Light: E. W. Tarn (Lockwood).—Elementary Mechanics (Blackie).—Timbers, and How to Know Them: Dr. R. Hartig; translated by W. Somerville (Edinburgh, Douglas).—Introduction to Fresh-water Algæ: Dr. M. C Cooke (K. Paul).—Short Logarithmic and other Tables, 4th edition: W. C. Unwin (Spon).—Walks in the Ardennes, new edition: P. Lindley (London).—Tourist Guide to the Continent: P. Lindley (London).—Sectional Map of South Dakota (Chicago, Rand).—Pocket Map, &c., of Michigan (Chicago, Rand).—Confidential Chats with Mothers: Mrs. Bowdick (Baillière).—British Cage Birds, Part 3: R. L. Wallace (L. Gill).—Canary Book, Part 3: R. L. Wallace (L. Gill).—Mathematical and Physical Papers, vol. 3: Sir Wm. Thomson (Cambridge University Press).—Electric Light Fitting: J. W. Urquhart (Lockwood).—Catalogue of the Fossil Reptilia and Amphibia in the British Museum (Natural History), Part 4: R. Lydekker (London).—L'Esprit de Nos Bêtes: E. Alix (Paris, J. B. Baillière)—Journal of the Royal Agricultural Society, vol. 1 (third series), Part 2; General Index to ditto, second series, (Murray).—Transactions of the Royal Society of Victoria, vol. 1, Part 2 (Melbourne).—Proceedings of the Royal Society of Edinburgh, vol. 16, pp. 385 to 846; vol. 17, pp. 1 to 128 (Edinburgh).—Transactions of the Royal Society of Edinburgh, vol. 33, Part 3; vol. 35, Parts 1 to 4 (Edinburgh).

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