

glucine may be obtained with a loss of not more than 10 per cent., and in such a state of purity that its equivalent has been found equal to 12.58.—Influence of various diets on the interchange of the gases in respiration, by MM. Hanriot and Ch. Richet. Continuing their researches on the respiratory function, the authors find that respiration increases with the increase of food, but only when this consists of the hydrates of carbon; that the interchange of the gases is but slightly affected by a nitrogenous and fatty diet; that feculent substances increase the absorption of oxygen and especially the production of CO₂; that the centesimal proportions of the absorbed oxygen or of the generated carbonic acid varies little during muscular repose; that the proportion of absorbed oxygen averages about 4.2 per cent., and of generated CO₂ about 3.4 per cent. The subject is illustrated by a diagram showing by a graphic process the influence of a nitrogenous and feculent diet on the respiratory functions generally.—Discovery of a worked flint and a mammoth's tusk at Vitry-en-Artois, by M. Ladrière. The position in which these remains were found seems to confirm the author's view that towards the close of the early Quaternary epoch (Mousterian age) *Elephas primigenius* and other large mammals, as well as man, were already spread over the west of Europe.

BERLIN.

Physical Society, January 20.—Prof. von Helmholtz, President, in the chair.—Prof. Oettingen spoke on the interference of electrical vibrations which is produced by the electrical oscillations discovered by Feddersen, during the spark discharge. The discharge oscillations of two Leyden batteries, differing in frequency and amplitude, were allowed to produce an interference in the path of a third spark, and this led to a constant succession of alternately increased and diminished intensities of this spark. The phenomenon was analyzed by means of a rotating mirror, which resolved it into its several phases, and the events taking place in each spark were recorded by instantaneous photography. The speaker exhibited a large number of these photographs, both as negatives and as positive reproductions, and explained them fully. In these experiments, as in those described at the previous meeting of the Society on the explosion of an electrolytic mixture of oxygen and hydrogen, Prof. Oettingen had succeeded in obtaining accurate results only when he had replaced the concave rotating mirror by a plane one, whose action he then thoroughly discussed.—Prof. Börnstein exhibited a preparation which he had recently obtained quite by chance, during one of his lectures. When lecturing on the diffusion of liquids, he was in the habit of using a Traube artificial cell. On placing a blue crystal of sulphate of copper in a solution of soluble glass, a precipitate is formed as a film on the surface of the salt, when it comes in contact with the soluble glass. The water from the solution then diffuses through the film, dissolving the salt and stretching the film until it is ruptured at some one point. When this occurs the solution of the sulphate of copper comes again into contact with the soluble glass, a new film is formed at the surface of contact, closing up the aperture, and the diffusion begins again. The film thus grows continually in a tubular form, until it finally permeates the whole solution. When recently repeating this lecture experiment, the speaker noticed that the film did not grow in the usual tubular way, but took the form of flattened parallel membranes which advanced through the solution at right angles to their length. He was at present unable to offer any explanation of this latter phenomenon.—Dr. Budde had recently submitted Clausius's fundamental law of electro-dynamics to a recalculation, while taking into account a large series of special conditions; among these he allowed for the motion of translation of the earth, and found that it had no influence on the validity of the law. At that time he had not calculated the influence of the earth's rotation; he had however, since then, repeated his former work, and gave an account of the results of his calculation, which showed that the rotatory motion of the earth had also no influence on the law. The same speaker finally drew attention to an error which occurs in all text-books, in connection with the determination of the potential of a system of points, and showed how illogical is the usual definition and of deducing of potential energy. Prof. von Helmholtz then directed attention to the fact that he was in the habit of determining potential energy in a different way, and that its derivation from a system of points is fraught with great difficulties.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Contributions to the Paleontology of Brazil: C. A. White (Washington).—Die Entstehung der Arten, 1 Theil: Dr. G. H. T. Eimer (Fischer, Jena).—Key to Todhunter's Differential Calculus: H. St. J. Hunter (Macmillan).—Annals of the Astronomical Observatory of Harvard College, vol. xiii. Part 2, Zone Observations made with the Transit Wedge Photometer (Wilson, Cambridge, Mass.).—Calendar and General Directory of the Department of Science and Art for the year 1888 (Eyre and Spottiswoode).—Electrical Instrument Making for Amateurs: S. R. Bottono (Whittaker).—Practical Education: C. G. Leland (Whittaker).—Volaptik, or Universal Language: A. Kirchhoff (Sonnenschein).—Geology: Chemical, Physical, and Stratigraphical, vol. ii.: J. Prestwich (Clarendon Press).—Observations made during 1883 at the U.S. Naval Observatory (Washington).—Die Prähistorischen Denkmäler der Provinz Westpreussen und der Angrenzenden Gebiete: Dr. A. Lissauer (Williams and Norgate).—The Shell Collector's Hand-book for the Field: J. W. Williams (Roper and Drowley).—My Telescope: A Quekett Club Man (Roper and Drowley).—Through the Yang-tse Gorges: A. J. Little (Low).—Report on the Administration of the Meteorological Department of the Government of India in 1886-87.—Indian Meteorological Memoirs, vol. iii. Part 2 (Calcutta).—A Manual of the Geology of India: Part 4, Mineralogy: F. R. Mallet (Trübner).—Bulletin of the U.S. Geological Survey, No. 33 (Washington).—The Law of the Universe: G. W. Cleverley (Brown, Hull).—Quarterly Journal of the Geological Society, vol. 44, Part 1, No. 173 (Longmans).—Proceedings of the Linnean Society of New South Wales, 2nd series, vol. ii. Part 3 (Sydney).—List of Contributors to ditto, 1st series (Sydney).—Quarterly Journal of Microscopical Science, February (Churchill).—Journal of the Royal Microscopical Society, February (Williams and Norgate).

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