

before fatigue occurred, but caused an increase of 61 to 76 per cent. in the muscular work done.

In the next place, the effect of sugar added to the meals was investigated.

The muscle energy producing effect of sugar was found to be so great that 200 grammes added to a small meal increased the total amount of work done from 6 to 39 per cent.

Sugar (250 grammes) was now added to a large mixed meal, when it was found not only to increase the amount of work done from 8 to 16 per cent. but increase the resistance against fatigue.

As a concluding experiment, 250 grammes of sugar was added to the meals of a full diet day; causing the work done during the period of eight hours to be increased 22 to 36 per cent.

Mathematical Society, January 11.—Mr. A. B. Kempe, F.R.S., President, in the chair.—The President communicated to the members present the intelligence which had just reached him of the death of Dr. H. R. Hertz, an honorary member of the society. The following communications were made:—"The Types of Wave-motion in Canals," by Mr. H. M. Macdonald; "On Green's Function for a System of Non-intersecting Spheres," by Prof. W. Burnside, F.R.S.

PARIS.

Academy of Sciences, January 8.—M. de Lacaze-Duthiers in the chair.—Studies on the formation of carbon dioxide and the absorption of oxygen by the detached leaves of plants, by MM. Berthelot and G. André. The authors have studied, under the most varied conditions, wheat, *Sedum maximum*, and *Corylus avellana*. Carbon dioxide is evolved from leaves in the absence of oxygen, but much more in the presence of oxygen and moisture. More oxygen is absorbed than is required for the production of the excess of carbon dioxide produced in an oxidising atmosphere. These reactions only occur in the presence of water.—Remarks on a note by M. Dunér, entitled "Is there Oxygen in the Atmosphere of the Sun?" by M. J. Janssen. The author considers M. Dunér's method unable to decide this question, and quotes experimental evidence to show that the effects considered are terrestrial.—Conclusions relative to the manipulation of the soil of oyster parks, and as to the causes of oysters becoming green, by MM. Ad. Chatin and A. Muntz.—On the approximate expressions for the higher terms in the development of the perturbation function, by M. N. Coculesco.—On the influence exercised by solar spots on the quantity of heat received by the earth, by M. R. Savélief. The author discusses the relationship of the activity of the solar surface and the calorific intensity of the solar radiation at the limits of the atmosphere, and draws the conclusion that with increase of solar activity, as evidenced by increase in the number of sunspots, there is increase of calorific intensity.—Thermodynamics of gases. Comparative values of the approximations of Joule's law and of Mariotte's and Gay-Lussac's laws, by M. Jules Andrade. Joule's law and Mariotte's and Gay-Lussac's laws are obeyed by gases within limits of the same order of magnitude.—The law of the magnetisation of soft iron, by M. P. Joubin. The author compares the formulæ representing the intensity of magnetisation of soft iron, in terms of the strength of field and the susceptibility of the material, with Van der Waal's formula for fluids, and concludes that the phenomena of the magnetisation of iron are analogous to the phenomena presented by a saturated fluid, and might be calculated by similar formulæ. Feebly magnetised bodies obey laws analogous to those of fluids far from their points of saturation.—On the absolute value of the magnetic elements on January 1, 1894, by M. Th. Moureaux. The values are given for Parc Saint-Maux and Perpignan.—On the composition of aqueous solutions, according to their indices of refraction, by M. Paul Bary. From the examination of a series of dilute solutions of metallic salts the result is deduced "that, if the theory of M. Arrhénius is admitted, the dissociated salts behave with regard to refraction as if the dissociation does not exist."—Researches on the chemical action of *abrostol* (calcium naphthylsulphonate) on wine, by M. Scheurer-Kestner.—On the presence of poison glands in adders, and on the poisonous properties of the blood of these animals, by MM. C. Phisalix and G. Bertrand. The poisonous principles of adder's blood proceed from the internal secretion of the superior labial glands, and the similarity of these principles to echidnine explains the immunity of the adder for viper poison.—Nitrates in living plants, by M. Demoussy.

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—On the influence of light and altitude on the striation of the valves of diatomacæ, by Frère J. Héribaud.—The insertion of the spores and the direction of the partitions in protobasidia, by M. Paul Vuillemin.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Geological Survey of Canada, Annual Report, Vol. v. 2 Parts and Maps (Ottawa).—Human Physiology: J. Thornton (Longmans).—The Elements of Co-ordinate Geometry: W. Briggs and J. H. Bryan, Part 1, 2nd Edition (Clive).—Illustrated Guide to British Mosses: H. G. Jameson (Eastbourne, the Author).—A Text-book of Solid or Descriptive Geometry; A. B. Dobbie (Blackie).—A Pocket-book of Marine Engineering, Rules and Tables: A. E. Seaton and H. M. Rounthwaite (Griffin).—Do you Know it? &c. C. E. Clark (Saxon).—Annuaire de l'Académie Royale des Sciences, &c., de Belgique, 1894 (Bruxelles).—Forschungsberichte aus der Biologischen Station zu Pion; Theil 2: Dr. O. Zacharias (Berlin, Friedländer).—Elements of Synthetic Solid Geometry: Prof. N. F. Dupuis (Macmillan).—Electric Waves: Dr. H. Hertz, translated by D. E. Jones (Macmillan).—Discovery of Lakes Rudolf and Stefanie, 2 Vols.: Lieut. L. von Höhnell, translated (Longmans).

PAMPHLETS.—Guide to the Examinations in Agriculture, and Answers to Questions, Advanced Series (Blackie).—Ditto, Physiology, Elementary Series (Blackie).—Ditto, Elementary Metallurgy, ditto (Blackie).—Ditto, Elementary Principles of Mining, ditto (Blackie).—Ditto, Chemistry, ditto (Blackie).—Test Papers in Mathematics: R. Roberts (Blackie).—Twenty-third Report of the Aeronautical Society of Great Britain (Greenwich, Richardson).—Report on the Destruction of Beer-casks in India by the Attacks of a Boring Beetle: W. F. H. Blandford (Eyre and Spottiswoode).—The Palm Weevil in British Honduras: W. F. H. Blandford (Eyre and Spottiswoode).—Annales de l'Observatoire Magnétique de Copenhague 1892: A. Paulsen (Copenhague).—Entwurf einer Neuen Integralrechnung auf Grund der Potenzial-Logarithmal- und Numeralrechnung. Zweites Heft: Dr. J. Bergbohm (Leipzig, Teubner).

SERIALS.—Actes de la Société Scientifique du Chili, Tome 3, 1 and 2 Livr. (Santiago).—Engineering Magazine, Souvenir No. (New York).—Journal of Anatomy and Physiology, January (Griffin).—American Meteorological Journal, January (Ginn).—Himmel und Erde, January (Berlin).—Xenia Orchidacea, Dritter Band, Sechstes und Siebentes, Heft (Leipzig, Brockhaus).—Mund, January (Williams and Norgate).—Bulletin Astronomique, December (Paris).

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