

Bulletin de l'Académie Royale de Belgique, No. 6.—The conditions under which hydrogen peroxide is decomposed, by W. Spring. The catalysis of hydrogen peroxide takes place without chemical action by contact with various substances when the formation of water is favoured. Any substance which is more easily impregnated with water than with H_2O_2 brings about the decomposition of the latter. A solution of H_2O_2 containing salts is the seat of a decomposition whose activity increases with the temperature.—Chemical study of eight earths of the Lower Congo, by E. Stuyvaert. The analysis of earths from Boma, Zenze, Banza-Kasi, Mayombe, and Vungu-Mumba proves that the soils of the Lower Congo, sandy as well as calcareous, are provided with reserves of phosphoric acid and potash which insure a high fertility. It is certain that in the territories where the disappearance of forests has not modified the rainfall, as in Mayombe, the cultivation of coffee, cocoa, and other economic plants can be carried on for a long time without the use of manure.—On the critical temperatures of solution and their application to general analysis, by L. Crismer. The critical temperatures of solution may be used for the identification of chemical bodies without the necessity of weighing them, and they form a valuable additional criterion for the purpose of qualitative analysis. The critical temperature of solution is independent of the amount of either body present. It varies very much from one substance to another, but is constant for the same substance. For a mixture of two bodies, it is sensibly equal to the arithmetical mean of those of the constituents taken singly. Just as the surface tension of a liquid is reduced to zero at the critical temperature of vaporisation, so the surface tension of the lower liquid tends towards zero at the critical temperature of solution, and the meniscus separating them becomes a plane. An optical method of determining these critical temperatures may be based upon this fact.

Wiedemann's Annalen der Physik und Chemie, No. 9.—Double refraction of electromagnetic rays, by Peter Lebedew. The author succeeded, by a modification of Hertz's apparatus, in dealing with waves not more than 0.6 cm. long, and in demonstrating the phenomena of polarisation, reflection, and refraction with apparatus of the size ordinarily used in optics. The resonator used was a small thermo couple of iron and "constantane." An ebonite prism 1.8 cm. long showed refraction to within 3° of arc. Rhombic sulphur showed measurable double refraction, and a "Nicol prism" was successfully constructed of two sulphur prisms with a plate of ebonite in place of the Canada balsam.—Luminescence of organic substances in the three states, by E. Wiedemann and G. C. Schmidt. Many organic vapours show true fluorescence, and some, like naphthalene, give composition spectra under the electric discharge, without being dissociated. Kathode luminescence is shown by many organic liquids, and the colour corresponds to that of the vapour. But the luminescence of the solid bodies often differs from that in the liquid state. Solid anthracene shows green, gaseous anthracene blue luminescence.—A vibration galvanometer, by H. Rubens. This instrument somewhat resembles Wien's optical telephone, and is used for measuring the intensity of alternating currents. It consists of a soft iron armature attached to a stretched wire. This executes torsional vibrations which are timed to the period of the alternating current. The latter traverses four electromagnets ranged round the armature, and when the periods are identical the armature executes strong torsional vibrations whose amplitude is measured by the width of a slit as seen reflected in a mirror attached to the wire. This arrangement is much more sensitive than the electro-dynamometer.—Theory of the broadening of spectrum lines, by B. Galitzin. The molecular theory is superior to those based upon Doppler's principle, upon Kirchhoff's law, or upon damping. It admits of a development based upon the electromagnetic theory, that of molecular resonators. The broadening is a consequence of the forced vibrations produced by the collision of molecules. The want of symmetry of the broadening, and the influence of temperature and pressure are immediate consequences of the molecular theory as developed by the author.

THE numbers of the *Journal of Botany* for August-October contain several articles of interest to descriptive botanists. Mr. E. G. Baker concludes his revision of the African species of *Eriosema*, and Mr. A. B. Rendle his description of Mr. Scott Elliot's tropical African orchids, including a large number of new species; Mr. D. Prain continues his account of the genus *Argemone*; Mr. E. A. L. Ballers contributes a list of Marine Algae new to Britain; and Mr. Arthur Bennett

some notes on British Characeæ.—There are biographical notices of the late Profs. W. C. Williamson and C. C. Babington, with a portrait of the latter.

Boll. della Soc. Sismol. Ital., vol. i., 1895, No. 5.—Some observations made on Vesuvius on June 21, 1895, by M. Baratta.—Vesuvian notes (January-June 1895), by G. Mercalli.—Hydro-thermal observations at Fiumecaldo from January to April 1895, by C. Guzzanti.—Notices of Italian earthquakes, April 1895. A valuable record of the observations of the first after-shocks of the Laibach earthquake of April 14 from a large number of Italian stations.

SOCIETIES AND ACADEMIES.

LONDON.

Entomological Society, October 2.—Prof. Raphael Meldola, F.R.S., President, in the chair.—Mr. McLachlan exhibited, on behalf of Mr. Bradley, of Birmingham, the specimens of Diptera attacked by a fungus of the genus *Empusa*, of which an account had recently appeared in the *Entomologist's Monthly Magazine*.—Mr. H. Tunaley exhibited specimens of *Lobophora vretata* from the neighbourhood of Birmingham. Specimens of the green dark form were shown in their natural positions on the bark, and specimens of the yellow form were shown on leaves on which they rested.—Mr. J. W. Tutt exhibited cases formed by a lepidopterous insect received from the Argentine Republic, which he said he recognised as being either identical with, or closely allied to, *Thyridopteryx ephemeraformis*, which did great damage to many orchard and forest trees in North America. Mr. Tutt also exhibited a series of *Lycana agon* captured by Mr. Massey, of Didsbury, on the mosses in Westmoreland. The males were remarkable in bearing two very distinct shades of colour. The females also differed considerably from the form occurring in the South of England. He also exhibited a long series of *Hydræcia lucens*, captured in the mosses near Warrington, and for comparison a series of *Hydræcia paludis*, and he read notes on the various specimens exhibited.—Dr. Fritz-Müller communicated a paper entitled "Contributions towards the history of a new form of larvæ of Psychodidæ (Diptera), from Brazil."—Baron Osten-Sacken communicated a paper, supplemental to the preceding one, entitled "Remarks on the homologies and differences between the first stages of *Pericoma* and those of the new Brazilian species."—The Rev. A. E. Eaton also contributed some supplementary notes to Dr. Fritz-Müller's paper.—Lord Walsingham, F.R.S., read a paper entitled "New Species of North American Tortricidæ." In this paper twenty-nine species were dealt with, of which twenty-six were described as new, from Florida, California, N. Carolina, Arizona, and Colorado. The paper also included certain corrections made by the author in the nomenclature of genera.

PARIS.

Academy of Sciences, October 7.—M. Janssen in the chair.—On an ascension to the summit of Mont Blanc, and on the work carried out during the summer of 1895 on the "massif" of this mountain, by M. J. Janssen. The ascent is described, together with an account of the cloud phenomena observed during a day in the higher regions. Passing on to describe the 0.33 m. telescope about to be erected at the observatory, it is remarked that the parts, now all assembled at the summit, will be mounted as a polar siderostat. A 0.6 m. mirror is to be mounted with the telescope. The observer will control all movements from a chamber of observation, which will be heated as may be required. As the instrument could not be taken down and remounted, it was bodily moved on to a new base formed of strong plates frozen on to the ice, and its pendulum then beat as regularly as at Paris. Observations with a Duboscq two-prism spectroscope in this very dry atmosphere failed to show any rays of aqueous origin in the solar light. The observatory has suffered a slight downward settling towards Chamounix; this took place in 1893 and 1894, and the movement is now insignificant. (See Our Astronomical Column.)—Study of some meteorites, by M. Henri Moissan. Iron from Kendall county in Texas contained amorphous carbon, but neither graphite nor diamond. Iron from Newstead (Roxburghshire) yielded amorphous carbon and graphite, but not diamond. Déésite, found in 1866 in the Sierra Déesa in Chili, contained a form of graphite only. Caillite, iron from Toluca-Niquipils,

Mexico (fall of 1784), contained no variety of carbon. Iron from Novy-Urej, Krasnoslobodsk, Penza, Russia (fall of August 23, 1886), yielded black diamond only. A further sample of meteoric iron from Cañon Diablo gave transparent diamond. All three varieties of carbon have been found in this meteorite.—On hyperglycæmia and glycosuria following ablation of the pancreas, by M. R. Lépine.—On the integration of Hamilton's differential equation, by M. Paul Staedel. Concerning the results shown in the paper, the author remarks: "There is the true generalisation of Liouville's theorem, which allows the utilisation of all progress in the integration of Hamilton's equations to find new types of integrable equations, that is, to form new linear elements of which the geodesic lines can be determined."—On parasitic electrodes, by M. G. Delvallez.—On the mechanical properties of alloys of copper and zinc, by M. Georges Charpy. The tensile strength increases with the percentage of zinc, attains a maximum at 43 per cent., and then decreases rapidly; the elongation before rupture also increases with the zinc, passes through a maximum at 30 per cent., and then rapidly diminishes.—On a carbide of glucinum, by M. P. Lebeau. Pure crystallised glucinum carbide has been prepared at the high temperature of the electric furnace. The properties of this carbide, more particularly its reaction with water resulting in its decomposition in the cold with the production of methane, resemble those of aluminium carbide C_3Al_4 , hence support is given to the formula C_3Be_4 . The atomic weight of glucinum must be near 14, and glucina becomes Be_2O_3 .—Researches on the combinations of mercury cyanide with iodides, by M. Raoul Varet. A thermochemical paper dealing with iodocyanides. Iodocyanides in solution yield the isopurpurate reaction on addition of potassium picrate at 30° C. and turn red-litmus paper blue. These salts must then be of the type $HgCy_2$, MCy_2 , HgI_2 , and not like the chlorocyanides MCl_2 , $2HgCy_2$. The transformation of the system $2HgCy_2 + MI_2$ into $HgCy_2 + MCy_2 + HgI_2$ absorbs on the average - 9.3 Cal. in solution, a quantity surpassed by the heat of formation of $HgCy_2$, MCy_2 , + 12.4 Cal., with that of its union with yellow HgI_2 giving + 2.3 Cal.—On the double decompositions of mercury cyanide and salts of alkaline and alkaline earthy metals, by M. Raoul Varet.—Action of air on grape must and on wine, by M. V. Martinand.—Deep dredgings made on the Caudan coast in the Gulf of Gascony during August 1895, by M. R. Koehler. Much material, which has not yet been thoroughly examined, was obtained from (a) depths of 300 to 600 metres, illustrating the change from littoral to profound faunas; (b) coralligenous depths on the abrupt cliff running parallel to the French coast; (c) the bottom of the deeper part of the Bay of Biscay.—On the effects of the winter of 1894-5 on the fauna of the coast, by M. Jourdain.—M. Resel communicated an extract from a memoir to the Minister of War on the storm at Besancon on July 1.

NEW SOUTH WALES.

Linnean Society, August 28.—Mr. Cecil W. Darley in the chair.—On the homology of the palatine process of the mammalian premaxillary, by R. Broom.—Botanical notes from the Technological Museum, Sydney. No iv., by J. H. Maiden and R. T. Baker.—The Silurian Trilobites of New South Wales, with reference to those of other parts of Australia. Part iii. *Phacopidae*, by R. Etheridge and John Mitchell. This important family is represented in the Silurian rocks of Australia by five species of *Phacops*, and one of *Hausmannia*; of these four are described as new. The Tasmanian forms are at present undescribed.

DIARY OF SOCIETIES.

LONDON.

SATURDAY, OCTOBER 19.

ESSEX FIELD CLUB (High Beach), at 6.30.—Annual Fungus Meeting, and Address by A. B. Rendle.

SUNDAY, OCTOBER 20.

SUNDAY LECTURE SOCIETY, at 4.—Tyndall as Worker and Teacher: Prof. Sir Frederick Pollock, Bart.

TUESDAY, OCTOBER 22.

ROYAL PHOTOGRAPHIC SOCIETY (Technical Meeting), at 8.—The Art of Lantern Slide Making: John A. Hodges.

FRIDAY, OCTOBER 25.

PHYSICAL SOCIETY, at 5.—The Radial Cursor: F. W. Lanchester.—The Development of Arbitrary Functions: J. Perry and H. F. Hunt.

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BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Guide Zoologique (Helder, De Boer, jun.).—Rural Water Supply: A. Greenwell and W. T. Curry (Lockwood).—Dog Stories: edited by J. St. Loe Strachey (Unwin).—Mesures Electriques: Prof. E. Gerard (Paris, Gauthier-Villars).—Index Kewensis, Part 4 (Oxford, Clarendon Press).—Metallurgy, an Elementary Text-Book: E. L. Rhead (Longmans).—Die Mechanische Bedeutung der Schienenbeineform: Dr. H. H. Hirsch (Berlin, Springer).—Polarisation et Saccharimétrie: D. Sidersky (Paris, Gauthier-Villars).—The Beginnings of Writing: Dr. W. J. Hoffman (Macmillan).—London University Guide and University Correspondence College Calendar, 1895-96 (Clive).—Cours Élémentaire de Manipulations de Physique: A. Witz, deux édition (Paris, Gauthier-Villars).
PAMPHLETS.—The Case against Butcher's Meat: C. W. Forward (Insurance Publication Dépôt).—Neuere Forschungen über das Gebiss der Sängler: Dr. R. Dewoletzky (Czernowitz).—The Elephants: Prof. R. J. Anderson (Belfast, Mayne).—Die Oberflächen-oder Schiller-Farben: Dr. E. Walter (Braunschweig, Vieweg).
SERIALS.—Journal of the Chemical Society, October (Gurney).—Proceedings of the Physical Society, October (Taylor).—Record of Technical and Secondary Education, October (Macmillan).—Journal of the Franklin Institute, October (Philadelphia).—American Journal of Science, October (New Haven).—Journal of the Royal Statistical Society, September (Stanford).—Proceedings of the Royal Society of Edinburgh, Vol. xx, pp. 385-480 (Edinburgh).—Engineering Magazine, October (New York).—Zeitschrift für Physikalische Chemie, xviii. Bd. 1 Heft (Leipzig, Engelmann).—Himmel und Erde, October (Berlin, Paetel).—Strand Magazine, October (Newnes).—Strand Musical Magazine, October (Newnes).

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