

PARIS.

Academy of Sciences, June 1.—M. Duchartre in the chair.—Calorimetric researches on humic acid derived from sugar, by MM. Berthelot and André. The experiments show that humic acid is a polybasic acid which may be caused to unite with three equivalents of potash to form insoluble salts: one salt described is monobasic, stable, and formed with the evolution of 18 calories, an amount comparable with that evolved when alkaline salts are formed by the action of strong acids. Many other properties of this acid are given.—Analysis of the light diffused by the sky, by M. A. Crova. The observations recorded extend from December 1889 to the same month in 1890. From the results it appears that the blue colour of the sky is most intense in the months of December, January, March, and September; and shows minima in July, August, and November. Roughly, the blue colour is deepest in the winter, and palest in summer; spring and autumn give sensibly the same results. A comparison of the intensities at different hours of the day indicates that a maximum blue coloration occurs in the morning and a minimum at the hottest hour in the day.—On Abelian equations, by M. A. Pellet.—On a new method of determining the vertical motion of aërostats, by M. André Duboin. The methods usually employed by balloonists to determine their state of vertical motion are by means of a barometer, or by throwing out light bits of paper and observing whether they ascend or descend relatively to the balloon. The author has devised an apparatus having the same object, on the principal of Kretz's differential manometer, and claims for it a sensibility 150 times greater than the ordinary mercurial barometer.—New models of copper oxide batteries, by M. F. de Lalande. A 35 per cent. solution of potash is the liquid employed. In it dips a conglomerate of copper oxide and sand covered with a thin porous layer of metallic copper, and one or two zinc plates. A cell thus constituted is shown to be practically constant for three or four days, and is said to work for years without getting out of order.—Determination of molecular weights at the critical point, by M. Philippe A. Guye. Using Van der Waals's formula, the author deduces

$$d = 1146 \frac{\delta\theta}{\pi(1670 + \theta)}$$

where d is the critical density with respect to air, δ the critical density with respect to water—that is, the weight of the substance in grams occupying a volume of one cubic centimetre at the critical state— θ the absolute temperature, and π the pressure in atmospheres. It is then shown that the values of d obtained by means of this empirical formula are equal to the molecular weights of the substances investigated divided by 28.87.—Research on the separation of metals from platinum, and in particular of palladium and rhodium in the presence of common metals, by MM. A. Joly and E. Leidié. The platinum or palladium are converted into soluble nitrites by the addition of potassium nitrite, and are thus separated from other metals.—On the specific heats of some solutions, by M. W. Timofeiew. Alcoholic solutions of bichloride of mercury and cadmium iodide were used. It is shown that the difference between the molecular specific heat of the solution and solvent is sensibly equal in the case of both salts, the mean value being 52. Taking this value to represent the molecular specific heat of the salt in solution and the specific heats of the alcohols employed to be expressed by the formulæ,

$$C_{\text{methyl}} = 0.56755 + 0.001633t; \quad C_{\text{ethyl}} = 0.53574 + 0.002132t;$$

it is shown that the observed and calculated specific heats of the solutions are very nearly the same in each case.—On the oxidation products of uric acid, by M. C. Matignon. The heats of formation and combustion of the principal derivatives of uric acid are considered.—On the employment of ammonium selenite for the identification of alkaloids, by M. A. J. Ferreira da Silva. The use of ammonium sulphoselenite for the detection of morphine and codeine was suggested by M. Lafon in 1885. The author shows how the method can be extended to other alkaloids.—On the development of the liver of Nudibranchiata, by M. H. Fischer. The research shows that the liver of Nudibranchiata is formed to a great extent by the left hepatic lobe of the embryo, and that the hepatic organs in two very different groups of Mollusca, the Lamellibranchiata and Nudibranchiata, are homologous productions.—The *Isaria*, a parasite of the larva of the cockchafer, by M. Alfred Giard.—The genera of the group of *Clusia*, and in particular the genus *Tovomitia*, by M. J. Vesque.—On some supporting elements of the leaves of Dicotyledons, by M. E. Pée-Laby.—Diffusion of three distinct forms of titanium oxide in the Cretaceous strata of Northern France, by M. L. Cayeux. A microscopic examination of the residue after

treating chalk with an acid leads the author to believe he has recognized the three crystalline forms of titanium oxide—rutile, anatase, and brookite.—The lichens on mulberry-trees, and their influence on silk culture, by M. G. Hallauer.—On the employment of carbon bisulphide against aerial parasites, by M. H. Quantin.

AMSTERDAM.

Royal Academy of Sciences, May 30.—Prof. Van de Sande Bakhuyzen in the chair.—Dr. Bakhuis Roozeboom treated of the solubility of mixed crystals of isomorphous substances. Admitting the absolute homogeneity of such crystals, according to the recent researches of Retgers, it is possible to deduce, by thermodynamical reasoning, that, when p and T are taken as constants, equilibrium is obtained when to a proportion α of the components in the mixed crystals, correspond two definite values C_1 and C_2 for the concentrations of the components in the aqueous solution. From the analogy between the said equilibrium and that between a liquid and a gaseous phase, composed of two substances, are further deduced some general conclusions as to the behaviour of solutions of two isomorphous salts when they are evaporated. This is done both for the case in which the mixed crystals form a continuous series, and that in which they present a hiatus. The latter was found in studying the solubility of $KClO_3$ and $TiClO_3$. Solid mixtures were obtained at 10° and 1 atm. from 0.363 and from 97.9-100 per cent. $KClO_3$. In the evaporation of any one solution, it tends to a composition, which is necessary to deposit the two kinds of crystals between which the hiatus exists.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

Bacteria and their Products: Dr. Sims Woodhead (Scott).—Einleitung in die Theoretische Physik; Zweite umg. und verm. auflage: V. von Lang (Braunschweig, Viewig).—A Manual of Forestry, vol. ii.: Dr. W. Schlich (Bradbury).—The British Noctuae and their Varieties, vol. i.: J. W. Tutt (Sonnenschein).—Practical Work in Organic Chemistry: P. W. Streatfield (Spon).—Katalog der Bibliothek der Deutschen Seewarte zu Hamburg (Hamburg).—Catalogue of the Fossil Birds in the British Museum (Natural History): R. Lydekker (London).—The Solar Parallax and its Related Constants: W. Harkness (Washington).—Favourite Foreign Birds: W. T. Greene (Gill).—Anthropogeographie: Dr. F. Ratzel (Stuttgart, Engelhorn).—Notes on Building Construction, Part 2, new edition (Longmans).—Poachers and Poaching: J. Watson (Hull).—Modern Cremation, 2nd edition: Sir Henry Thompson (Paul).—Nature and Treatment of Diphtheria, 3rd edition: R. W. Parker (Lewis).—Riddles of the Sphinx: A Troglodyte (Sonnenschein).—Housing of the Poor: F. H. Millington (Cassell).—British Cage-Birds, Part 14: R. L. Wallace (Gill).—A Manual of Orchidaceous Plants, Part 7 (Veitch).—Tasmanian Official Record, 1891 (Hobart).—The Birds of Manitoba: E. E. Thompson (Washington).—Scientific Results of the Second Yarkand Mission; Coleoptera (Calcutta).—Smithsonian Report, 1889 (Washington).—Internationales Archiv für Ethnographie, Band 4, Heft 3 (Paul).—The Asclepiad, No. 30, vol. viii.: E. W. Richardson (Longmans).—Photographic Reporter, June (Hazell).

CONTENTS.

	PAGE
Mammals Living and Extinct. By Prof. E. Ray	
Lankester, F.R.S.	121
Forty Years in a Moorland Parish	122
Our Book Shelf:—	
Lowne: "Anatomy, Physiology, Morphology, and Development of the Blow-fly."—L. C. M.	123
Brinton: "Races and Peoples: Lectures on the Science of Ethnography"	124
Letters to the Editor:—	
Crystals of Platinum.—J. Joly	124
Porpoises in the Victoria Nyanza.—Dr. P. L. Sclater, F.R.S.	124
The Zoological Station at Naples.—W. Percy Sladen	124
A British Institute of Preventive Medicine	124
Earth-Currents and the Electric Railway. (<i>Illustrated</i> .) By William Ellis	127
The Annual Visitation of the Royal Observatory	128
The Classification of the Tunicata in relation to Evolution. By Prof. W. A. Herdman	130
Photo-Stellar Spectra. By Rev. T. E. Espin	133
Some Aspects of Stas's Work. By V. C.	134
Notes	135
Our Astronomical Column:—	
The Spectra of Double Stars	138
The Perseid Radiant	138
The Flora of Diamond Island. By W. Botting Hemsley, F.R.S.	138
University and Educational Intelligence	138
Societies and Academies	139
Books, Pamphlets, and Serials Received	144