

saccharimeter, by M. Laurent.—Lecture experiment on the colour-change of certain double iodides, by M. Boettger.

No. 9.—On physical isomerism, by M. Lehmann.—On the elasticity of gypsum and mica, by M. Coromilas.—On the influence of pressure on the temperature at which water shows a maximum density, by M. Van der Waals.—Apparatus for measurement of the expansion of rigid bodies by heat, by M. Reusch.

SOCIETIES AND ACADEMIES

LONDON

Chemical Society, November 1.—Dr. Gladstone in the chair.—The following papers were read:—On some hydrocarbons obtained from the homologues of cinnamic acid, by W. H. Perkin. These hydrocarbons were prepared either by heating the acids or by treating the hydrobromo acids with bases. The following acids were prepared and examined:—Hydrobromocinnenylic, hydrobromocinnenylcrotonic, hydrobromocinnenylangelic. The following hydrocarbons were obtained:—Isopropylvinylbenzene, isopropylallylbenzene, isopropylbutenylbenzene, allylbenzene, and butenylbenzene; the dibromides of these bodies were also prepared and examined.—On anethol and its homologues, by W. H. Perkin. By heating methylparoxyphenylacrylic acid, vinylic anethol was obtained, similarly allylic or ordinary anethol and butenylic anethol were prepared. In conclusion the author discusses the formation of the hydrocarbons from the hydrobromo acids, and concludes that they are formed simply by the separation of hydrobromic acid and carbonic anhydride.—On two new methods for estimating bismuth volumetrically, by M. M. P. Muir. To a solution of bismuth in nitric acid an excess of sodium acetate is added, and then a measured volume of standard sodium phosphate solution also in excess; the bismuth is precipitated, the precipitate filtered off, and the excess of phosphoric acid determined in the filtrate by uranium acetate. The other method given does not yield such accurate results.—On the oxidation of ditolyl, by T. Carnelly. By the oxidation of solid ditolyl the author obtained diparatolylphenylcarbonic acid and diparadiphenyldicarbonic acid; liquid ditolyl yielded orthoparatolylphenylcarbonic acid, orthoparadiphenylcarbonic acid, and finally terephthalic acid.—On a new manganese reaction, by J. B. Hannay. If a solution of a manganese salt in strong nitric acid is warmed in the presence of an iron salt with some crystals of potassic chlorate, the iron and manganese are precipitated as a double manganate of iron and manganese. The author proposes this reaction for separating iron from aluminium, &c.

PARIS

Academy of Sciences, October 29.—M. Peligot in the chair.—The following papers were read:—*Résumé* of a history of matter (second article), by M. Chevreul.—On the solar photospheric system, by M. Janssen.—The telephone of Mr. Graham Bell, by M. Breguet.—On the determination of the quantity of mud contained in current water, by M. Bouquet de la Grye. He uses an instrument named a pelometer ($\pi\lambda\lambda\omicron\varsigma$, mud), consisting of a V-shaped vessel whose rectangular faces, inclined one-tenth, are of thin glass, while its sides are of copper or white iron. One glass face has a centimetre scale commencing from the angle. The pelometer is filled and held vertical; it then presents a succession of vertical layers of increasing thickness upwards, and by comparison with glass-ended tubes containing muddy water of various known densities, the proportion of mud may be ascertained. Other methods are given. Experiments made at Rochelle show that the quantity of mud per litre varies from one to ten times according to the depth. He considers regular measurements of the kind on watercourses desirable for agriculture, &c.—On an American vine-stock not attacked by phylloxera, by M. Fabre. This vine belongs to the species *Riparia*. Among other merits (besides its immunity) it gives cuttings readily, receives grafts from French species better than any other American variety, thrives in most arid soils, compact clays, and soils long exhausted by vine cultivation, and grows very rapidly.—On treatment of phylloxerised vines with sulphocarbonate of potassium applied with the distributing pail, in 1876-77, by M. Gueyraud.—Observations of the planet (175) Palisa, made at the Paris Observatory, with the west equatorial of the Garden, by M. M. Paul and Prosper Henry.—Stellar systems of 36 Ophiuchus and 40 Eridan, by M. Flammarion.—General form of coefficients of certain developments, by M. André.—New mode of plane representation of classes of graduated surfaces, by M. Mannheim.—Experiments on the disruptive discharge made with the chloride of silver battery by M. M. Warren de la Rue and H. W.

Müller.—Rheostatic machine, by M. Planté. He combines a number of condensers (made of mica and tin), so as to be easily charged, from a secondary battery, in quantity and discharged in tension. The commutator is a long cylinder of hardened caoutchouc, having longitudinal metallic bands, and traversed by bent copper wire (for the two objects named). Metallic springs are connected with the two armatures of each condenser, and fixed on an ebonite plate on each side of the cylinder, which is rotated. A series of sparks can be got between the branches of the exciter in this arrangement, quite like those from electric machines with condensers. The discharges are always in the same direction, and the loss of force is less than in induction apparatus. A great many discharges can be had without the secondary battery being perceptibly weakened, as each discharge removes only a very small quantity of electricity.—On semi-diurnal barometric variations, by M. de Parville. The tropical hours may present, at a few days' interval, divergences amounting, during the great period, to forty-five minutes. The barometric variations in the tropical hours are not uniform; the maximum of descent of the mercury column occurs about three o'clock. Equality between the periods of day and night has never occurred. The amplitude of the variation is greater by day than by night, and during the dry season than during the wet.—On the action of anhydrous acids on anhydrous bases, by M. Bechamp. They are capable of uniting wholly.—On the determination of reducing sugar contained in commercial products, by M. Girard.—On the reducing sugar of commercial products in its relations to saccharimetry, by M. Morin. He shows the optical inactivity of this sugar.—On the production of racemic acid in the manufacture of tartaric acid, by M. Jungfleisch.—On some physical properties of *quercite*, by M. Prunier.—Action of solar light with variable degrees of intensity on the vine, by M. Macagno. Diminution of intensity hinders the production of glucose; the other elements (produced or assimilated) are in direct ratio of the luminous intensity. A portion only of potash is in inverse ratio of the luminous intensity: the contrary occurs in the case of potash combined with tartaric acid.—On the Orthopectida, a new class of animal parasites of Echinoderms and Turbellaria, by M. Giard.—On the calcareous algae belonging to the group of verticillate Siphonae (*Dasycladaceae, Harv.*), and confounded with the Foraminifera, by M. Munier Chalmas.—Effects of faradisation in a case of hydrophobia in man, by M. Menesson. Considerable sedative effects were obtained; the patient, however, died after two days through a sudden stoppage of the heart's contractions.

CONTENTS

	PAGE
EXPLOSIONS IN MINES. By W. GALLOWAY	21
THE SUN'S PHOTOSPHERE By J. NORMAN LOCKYER	22
FOWNES' "MANUAL OF CHEMISTRY"	24
OUR BOOK SHELF:—	
Bryce's "Transcaucasia and Ararat; being Notes of a Vacation Tour in the Autumn of 1876"	25
Wormell's "Thermodynamics"	25
"Simple Lessons for Home Use"	25
LETTERS TO THE EDITOR:—	
Appunn and Koenig.—Beats in Confined Air.—ALEXANDER J. ELLIS, F.R.S.	26
The Radiometer and its Lessons.—DR. W. B. CARPENTER, F.R.S.; Prof. OSBORNE REYNOLDS, F.R.S.	26
Potential Energy.—G. M. MINCHIN	27
Effects of Urticating Organs of <i>Millepora</i> on the Tongue.—L. F. POURTALES	27
Drowned by a Devil Fish.—H. N. MOSELEY, F.R.S.	27
The Earthworm in Relation to the Fertility of the Soil.—REV. HENRY COOPER KEY; A. STEPHEN WILSON	28
M. Alluard's Condensing Hygrometer.—G. J. SYMONS (<i>With Illustration</i>)	28
Optical Spectroscopy of the Red End of the Solar Spectrum.— J. B. N. HENNESSEY, F.R.S.	23
Singing Mice.—JOSEPH SIDEBOTHAM; GEORGE J. ROMANES	29
Meteor.—RALPH COPELAND	29
INTERNATIONAL POLAR EXPEDITIONS. By E. J. REED, C.B., M.P., F.R.S.	29
THE NORWEGIAN DEEP-SEA EXPEDITION. By Dr. H. MOHN (<i>With Map</i>)	30
ON THE DIFFUSION OF MATTER IN RELATION TO THE SECOND LAW OF THERMODYNAMICS. By S. TOLVER PRESTON	31
MUSICA SCIENCE OF NUMBERS. By W. CHAPPELL, F.S.A.	32
ROBERT SWINHOE, F.R.S.	35
DOUGLAS A. SPALDING	35
OUR ASTRONOMICAL COLUMN:—	
The Solar Eclipse of 1788, February 2	36
The Minor Planet Euphrosyne	36
Comets of Short Period in 1878	36
NOTES	37
AMERICAN SCIENCE	39
UNIVERSITY AND EDUCATIONAL INTELLIGENCE	39
SCIENTIFIC SERIALS	39
SOCIETIES AND ACADEMIES	40