

state of division. To produce this the air passes through a glass bulb containing two electrodes of the metal under examination. About ten powerful sparks per second, furnished by a condenser of high capacity, are allowed to pass between the two electrodes. Sufficient of the metal is removed in this way to give a flame rich in lines. The actual quantity used, however, is extremely small, and is hardly weighable after some hours' sparking. The method is therefore peculiarly adapted for studying the spectra of rare and costly metals.—Photomicrography in colour with autochrome plates by A. and L. Lumière: Ch. A. François **Franck**.—Remark relating to the detection of calcium: H. **Baubigny**. A reclamation of priority as regards the use of an ammoniacal solution of potassium ferrocyanide as a characteristic test for calcium.—The absolute atomic weight of manganese: Gustavus D. **Hinrichs**. An application of the author's method of calculation to the experimental results of Baxter and Hines. The value 54.95 found by these workers is converted into 55 exactly by these calculations.—Arsenic acid and the methylarsenic acids: E. **Baud** and A. **Astruc**. A thermochemical paper.—The action of fluorine on selenium in the presence of glass: Paul **Lebeau**. Experimental reasons are given for assuming that the substance produced by the interaction of selenium and fluorine in the presence of glass is not pure selenium hexafluoride, but a mixture of at least two substances.—The solubility of alumina in aluminium sulphide and of magnesia in sulphide of magnesium: Marcel **Houdard**. The oxides of both magnesium and aluminium have been obtained in a crystalline form when fused with the corresponding sulphide in the electric furnace.—The alloys of nickel and tin: Em. **Vigouroux**. The alloys of nickel and tin containing up to 40 per cent. of the latter metal are feebly magnetic. Under the action of nitric acid and potash a non-magnetic alloy having the composition Ni<sub>3</sub>Sn can be isolated.—The glycol of anethol; its transformation into anisylacetone: MM. **Tiffeneau** and **Daufresne**.—A new method of ring formation of the substituted pimelic and adipic acids: H. G. **Bianc**. The acid is converted into its anhydride by treatment with acetic anhydride, and this, followed by slow distillation, gives the corresponding cyclic ketone. The yields are very good; details are given of eleven ketones prepared according to this method.—The dimagnesium compound of 1:5-dibromopentane: V. **Grignard** and G. **Vignon**. Dibromopentane readily forms a magnesium compound, soluble in ether. A preliminary account is given of the reactions of this substance with carbon dioxide, ethyl acetate, and diacetyl.—The application of the method of limiting densities to the liquefiable gases: Ph. A. **Guye**. The difficulty with these is the accurate evaluation of the term  $A'_0$ , representing the deviation from Boyle's law. A linear extrapolation from densities measured at pressures between 0.5 and 1 atmosphere is not sufficiently accurate, and the three modes of parabolic extrapolation proposed by D. Berthelot do not lead to identical results. It is pointed out that, admitting the idea of a gas constant, the parabolic extrapolation will not hold good.—The cathodic phosphorescence of complex systems. The paralysing action exercised by certain excitors of the rare earth series upon others of the same series: G. **Urbain** and Clair **Seal**.—The colloidal properties of starch: E. **Fouard**.—The comparative action of extracts of barley and of malt upon the more resisting dextrins: J. **Wolff**.—The amount of oxygen in oxyhæmoglobin from the horse: MM. **Piettre** and **Vila**.—The polymorphic transformations of isomorphous mixtures of three bodies: Fred. **Wallerant**.—The inverse bundle of *Zilla macroptera*: C. **Gerber**.—The detection of invertine, sucrose, or saccharose in various organs of the vine and in some fruits: V. **Martinand**.—Protective and evasive autotomy: Henri **Piéron**.—The structure of the divided nerves in a strictly physiological evolution: N. A. **Barbieri**.—The geology of the central Sahara: R. **Chudeau**.—The presence of Carboniferous strata in the neighbourhood of Taoudeni, south-western Sahara: G. B. M. **Flamand**.—The post-helvetian eruptions anterior to the recent volcanoes in the north-west of Sardinia: M. **Deprat**.—The storm of May 22 1907, in the department of Loiret: M. **Maillard**.

DIARY OF SOCIETIES.

THURSDAY, JUNE 27.

ROYAL SOCIETY, at 4.35.—On the Dynamical Theory of Gratings: Lord Rayleigh, O.M., F.R.S.—On the Surface Tension of Liquids investigated by the Method of Jet Vibration: S. D. Pedersen.—Cases of Colour Blindness, No. VI. to No. XVIII., together with Eleven Selected Examples of Normal Colour Sensation: Dr. G. J. Burch, F.R.S.—On the Occurrence of Post-tetanic Tremor in Several Types of Muscles: Dr. D. F. Harris.—On the Pressure of Bile Secretion and the Mechanism of Bile Absorption in Obstruction of the Bile Duct: P. T. Herring and S. Simpson.—Further Studies of Gastrotoxic Serum (Progress Report): Dr. C. Bolton.—Observations on the Life-history of Leucocytes, Part III.: C. E. Walker.—The Annealing of Copper with Special Reference to Dilatation: Prof. T. Turner and D. M. Levy.—On a Standard of Mutual Induction: A. Campbell.—A New Current Weigher and a Determination of the E.M.F. of the Normal Weston Cadmium Cell: Prof. W. E. Ayrton, F.R.S., T. Mather, F.R.S., and F. E. Smith.—On the Velocity of the Kathode Particles emitted by Various Metals under the Influence of Röntgen Rays and its Bearing on the Theory of Atomic Disintegration: P. D. Innes.—On the Force Required to Stop a Moving Electrified Sphere: G. F. C. Searle, F.R.S.—Some Notes on Carbon at High Temperatures and Pressures: Hcn. C. A. Parsons, C.B., F.R.S.—The Hard and Soft States in Ductile Metals: G. T. Beilby, F.R.S.—Ranges and Behaviour of Rifle Projectiles in the Air: A. Mallock, F.R.S.—Experiments on a New Kathode Dark Space in Helium and Hydrogen: F. W. Aston.—Note on the Use of the Radiometer in Observing Small Gas Pressures: Sir James Dewar, F.R.S.—And other Papers.

FRIDAY, JUNE 28.

PHYSICAL SOCIETY, at 5.—Demonstration of the Uses of his Hot Wire Oscillographs and Hot Wire Wattmeters: J. T. Irwin.—Experiments on the Production of Sand Ripples on the Sea Shore: Mrs. Ayrton.—(1) A Cosine Flicker Photometer; (2) Some Phenomena in Colour Vision: J. S. Dow.—Description and Exhibition of Students' Apparatus for Measuring Permeability and Hysteresis: Prof. W. E. Ayrton and T. Mather.

WEDNESDAY, JULY 3.

BRITISH ASTRONOMICAL ASSOCIATION, at 5.

THURSDAY, JULY 4.

CHEMICAL SOCIETY, at 8.30.—isoNitroso and Nitrodimethyldihydroresorcin: P. Haas.—The Structure of Carbonium Salts: F. Baker.—Studies of Dynamic Isomerism, Part VI. The Influence of Impurities on the Mutarotation of Nitrocamphor: T. M. Lowry and E. H. Magson.—The Relation between Absorption Spectra and Chemical Constitution, Part VIII., The Phenyl Hydrazones and Osazones of  $\alpha$ -Diketones: E. C. Baly, W. B. Tuck, E. G. Marsden, and M. Gazdar.—Permanganic Acid: M. M. P. Muir.

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