

into water kept at 0°. The ozonised oxygen thus set free was carefully analysed by treatment with potassium iodide and measuring the iodine set free. The percentage of ozone was on one occasion as high as 14.4 per cent., and this preparation, although somewhat delicate, is not costly. The ozone produced in this way is absolutely free from all trace of oxides of nitrogen, and may possibly have industrial applications.—The preventive qualities of the blood serum of an immunised heifer against contagious peripneumonia in cattle, by MM. S. Arloing and Duprez. The direct inoculation for peripneumonia suggested by M. Willems has two disadvantages: some time is required to develop the protective effects, and occasionally fatal tumours occur. A heifer was directly inoculated with gradually increasing amounts of venom until it became capable of resisting a dose five hundred times greater than would be sufficient to kill an unprotected animal. The serum of this heifer was used in the experiments, which were not altogether conclusive, since one of the injected animals caught the disease, whilst another, although unprotected, escaped.—Report on an earthquake at Smyrna on September 20, by the French Consul General at Smyrna.—Observations of the Giacobini Comet (September 29, 1899), made at the Observatory of Algiers, with the equatorial of 31.6 cm. aperture, by MM. Rambaud and Sy.—On a problem relating to the congruences of right lines, by M. E. Goursat.—On the classification of projective groups in space of  $n$  dimensions, by M. F. Marotte.—Theory of the number of roots of an algebraic equation comprised in the interior of a given circumference, by M. Michael Petrovitch.—On the reactions of induction of alternators, by M. A. Blondel.—Experiments in telegraphy without wires, carried out between Chamonix and the summit of Mont Blanc, by MM. Jean and Louis Lecarme. The communications were interfered with by the ice, or by the absence of water in the soil; neither were the effects of atmospheric electricity sufficient to stop the messages, but during the time the electric light at Chamonix was in action working was impossible.—Radio-graphic bulb with a cold antikathode, by MM. Abel Buguet and Victor Chabaud. The platinum tube forming the antikathode is fused directly to the glass, and is kept cool by cold water. Very powerful discharges from large induction coils can be used with this tube without any heating of the platinum resulting.—On a new radio-active material, by M. A. Debiere. A new radio-active substance has been isolated from pitchblende. It is distinguished from polonium and radium by its chemical properties, which resemble titanium very closely, and also by the fact that it is not spontaneously luminous. The rays emitted by this substance, for which no name is as yet suggested, are about 100,000 times stronger than those given off by uranium. They render gases capable of discharging electrified bodies, excite the phosphorescence of barium platinocyanide, and affect photographic plates.—On the atomic weight of boron, by M. Henri Gautier. The author, after reviewing the earlier work of Berzelius, Abrahall, and Ramsay and Aston, attempts to prepare compounds of boron of the constancy of composition of which there can be no doubt, and selects the sulphide  $B_2S_3$  and carbide  $B_2C$  for a preliminary study.—On anhydrous magnesium carbonate, by M. R. Engel.—On the heat of oxidation of tungsten, by MM. Delépine and Hallopeau. The usual methods of combustion at ordinary pressure, combination with a halogen, attack by water or acid having failed for tungsten, the method of burning in the calorimetric bomb was tried, and after some preliminary experiments was found to give good results, the mean value per gram of tungsten being 1062 calories. In forming the oxides  $TuO_2$  and  $TuO_3$ , each atom of oxygen has nearly the same calorific value.—Action of potassium-ammonium upon arsenic, by M. C. Hugot. With the alkaline ammonium in excess,  $AsK_3$  is formed; with arsenic in excess,  $As_4K_2$ .—Action of bromine in presence of aluminium chloride upon some chloro-benzenes, by MM. A. Mouneyrat and Ch. Pouret. Bromine acts readily upon chlorobenzene in presence of aluminium chloride, and gives an excellent yield of  $p$ -bromo-chlorobenzene. The following compounds have been obtained by this method:  $C_6Br_2Cl$ , [1, 4]  $C_6Br_4Cl_2$ , [1, 2, 4]  $C_6Br_3Cl_3$ , [1, 2, 4, 5]  $C_6Br_2Cl_4$ , and  $C_6Br_4Cl(CH_3)$ .—On the constitution of the colouring matter of leaves; chloroglobin, by M. Tsvett.—Demonstration of the disaggregation of leucocytes and the solution of their contents in the blood plasma during hypoleucocytosis. Influence of intravascular leucolysis on the coagulation of the blood, by M. Henri Stassano.—Germination of the seed of the

carob; production of mannose by a soluble ferment, by MM. Ed. Bourquelot and H. Hérissé. During the germination of the carob seed there is soluble ferment produced, which acts upon the stored albumen similarly to diastase upon amylaceous albumens, mannose and galactose being the products.—On *Aplosporidium*, a new order of the class of Sporozoa, by MM. Maurice Caullery and Félix Mesnil.—Calcified suberous layers from the coal measures of Hardighen, by M. C. Eg. Bertrand.—On the composition and food value of the principal fruits, by M. Balland.—Submarine lithology of the coasts of France, by M. J. Thoulet.

## DIARY OF SOCIETIES.

THURSDAY, OCTOBER 26.

CAMERA CLUB, at 8.15.—Illusions and Anomalies of Vision: Shelford Bidwell, F.R.S.

FRIDAY, OCTOBER 27

PHYSICAL SOCIETY, at 5.—The Magnetic Properties of the Alloys of Iron and Aluminium: Dr. S. W. Richardson.—Exhibition of a Model illustrating a Number of the Actions in the Flow of an Electric Current: G. L. Addenbrooke.—Repetition of some Experiments with the Wehnelt Interrupter devised by Prof. Lecher: W. Watson

INSTITUTION OF MECHANICAL ENGINEERS, at 7.30.—The Incrustation of Pipes at Torquay Water Works: William Ingham.—A Continuous Mean-Pressure Indicator for Steam Engines: Prof. William Ripper.

WEDNESDAY, NOVEMBER 1.

ENTOMOLOGICAL SOCIETY, at 8.—Exhibition of Lepidoptera from Bulgaria: H. J. Elwes, F.R.S., and Mrs. Nicholl.

SOCIETY OF PUBLIC ANALYSTS, at 8.—The Meaning of the Acetyl Value in Fat Analysis (with Lantern Illustrations): Dr. J. Lewkowitsch.

THURSDAY, NOVEMBER 2.

LINNEAN SOCIETY, at 8.—On the Proliferous State of the Awn of Nepal Barley: Rev. Prof. Henslow.—On the Hyobranchial Skeleton and Larynx of the New Aglossal Toad, *Hymenochirus Boettgeri*: Dr. W. G. Ridewood.—On the Eye-spot and Cilium in *Engelmannia viridis*: Harold Wager.

CHEMICAL SOCIETY, at 8.—The Theory of Saponification: J. Lewkowitsch.—The Action of Dilute Nitric Acid on Oleic and Elaidic Acids: F. G. Edmed.—Tetrazoline: Siegfried Ruhemann and H. E. Stapleton.—On Ethylic Dibromobutanetetracarboxylate and the Synthesis of Tetrahydrofuran-*aa*-dicarboxylic Acid: Dr. Bevan Lean.—(1) Camphoroxime. Part III. Behaviour of Camphoroxime towards Potassium Hypobromite; (2) Optical Influence of an Unsaturation Linkage on certain Derivatives of Bornylamine: Dr. M. O. Forster.

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