

The degree of M.A. honoris causa is to be conferred on Dr. Somerville, the recently-elected Professor of Agriculture.

Mr. W. N. Shaw, F.R.S., is reappointed Assistant-Director of the Cavendish Laboratory.

Prof. D. J. Cunningham, F.R.S., of Dublin, is appointed an Elector to the chair of Anatomy, and Prof. W. F. R. Weldon, F.R.S., of Oxford, an Elector to the chair of Zoology, in succession to the late Sir W. H. Flower.

Dr. D. MacAlister, of St. John's College, has been re-elected a representative of the University on the General Medical Council for five years.

Fifteen candidates have passed the recent examination in sanitary science, and have thus qualified for the Diploma in Public Health.

THE destruction of the Technical Institute at West Ham by a fire which occurred on Monday night, and was first discovered in the chemical laboratory, is a disaster to technical education in London. The Institute commenced a short time ago an admirable programme of work in science and technology, and as it was the only municipal technical institute in the metropolitan area, its career has been closely followed. The damage done is estimated at over 80,000*l.*, only part of which is covered by insurance.

THE systematic study of geography is so much neglected in this country that it is to be hoped the School of Geography recently established at Oxford will be successful. During the present term Mr. H. J. Mackinder, the University Reader in Geography, will lecture on the historical geography of the British Isles. The lecturer in physical geography (Mr. Dickson) will lecture on the climate of the British Isles. The assistant to the Reader (Dr. Herbertson) will lecture on the geomorphology of Europe; and the lecturer in ancient geography (Mr. Grundy) will lecture on the general historical topography of Greece. Dr. Herbertson will give instruction in cartography and practical geography, with field work; and during the term special attention will be given to the study of map projections, and of physical maps of all kinds.

ANOTHER addition to the laboratory equipment of our public schools has recently been made at Felsted, where new buildings for the teaching of science were opened last week. The laboratory consists of a lecture room with raised seating and a gallery, the lecture table being provided with down draught and electricity for experimental purposes, and behind it a faced wall surface for the lantern. The chemical laboratory is a room about thirty feet square to accommodate twenty-six boys, and has an adjoining balance room. In addition there is a general physical laboratory for a like number of boys, a special laboratory for senior physics, an optical room, store room and workshop. The building is in a large measure a gift of one of the governors of the school, and has been erected under the direction of Mr. A. E. Munby. It was opened by Dr. Garnett, of the London County Council, who gave an address on science as a means of general education. Sir John Gorst recently visited the building and expressed his warm approbation of the arrangements.

PRACTICAL science in rural districts, as a means of benefiting British agriculture, has, we are glad to observe, received much support lately. The meeting of the Agricultural Education Committee, held at the Society of Arts on Friday last, showed the existence of a strong feeling that active efforts should be made to secure systematic and efficient instruction, both theoretical and practical, in agricultural subjects suitable to every class engaged in agriculture; and to diffuse among the agricultural classes a more thorough appreciation of the advantages of instruction bearing directly or indirectly on their industry. The chairman, Sir William Hart Dyke, explained that the province of the committee, as a united body, was to bring pressure upon Parliament and upon public opinion to establish in rural schools rational courses of instruction bearing upon agricultural pursuits. The following resolutions were subsequently adopted:—(1) That, in the proposed organisation of the new Board of Education, due regard should be had to the interests of agricultural instruction. (2) That proper provision should at once be made at certain of the Teachers' Training Colleges for giving to those who desire it both theoretical and practical instruction in subjects bearing on agriculture and horticulture. (3) That, after a certain date to be named in next year's code, instruction in the elementary branches of natural

science bearing on agriculture should be made compulsory in rural elementary schools, and that such instruction should be accompanied and illustrated by experiments, and (where possible) by practical work in plots of ground attached to the schools. (4) That county authorities be encouraged to provide experimental and school farms, and to contribute, by scholarships and otherwise, to some agricultural college or department of the first rank. The realisation of the conditions expressed in these resolutions should be desired by every one interested in national progress.

SCIENTIFIC SERIAL.

Wiedemann's Annalen der Physik und Chemie, No. 9.—Dispersion of gypsum, by W. König. The author studies the dispersion of gypsum in the visible spectrum by observing the influence of wave-length upon the width of interference fringes produced by means of wedges made of that material.—Electric charge of freshly-prepared electrolytic gases, by W. Kösters. Hydrogen and oxygen are positively electrified by passing through sulphuric acid, and this may help to explain the positive charge of the same gases when produced by electrolysis. In other cases, however, the gases passed through a liquid do not assume the same electrification as when generated by electrolysis.—Further experiments with Becquerel rays, by J. Elster and H. Geitel. Thinking that the radiation of uranium and thorium compounds might be influenced by the impact of kathode rays, the authors exposed a piece of Joachimsthal pitchblende to kathode rays, but they could not trace any influence of the rays. The authors believe the Becquerel rays to be Röntgen rays of small intensity. They support this view by showing that they are not deflected by a magnet (see p. 623).—Radio-active baryta and polonium, by F. Giesel. The author describes the preparation of the radio-active barium salts. He has not yet succeeded in isolating the active principle, whether radium or polonium.—Canal and kathode rays, by P. Ewers. The writer does not share the prevalent opinion that canal rays consist of projected anode particles, since the quantity of electricity conveyed by them varies with the material of the kathode, but not with that of the anodes. He concludes that the canal rays consist of positive ions of the material of the kathode, but the matter thus conveyed to the wall is so small that it would require 288 hours of continuous working to deposit one milligramme of aluminium.—Law of development of Hittorf's dark space, by H. Ebert. Hittorf's dark space is the narrow space which immediately adjoins the luminous kathode layer. Its width increases as exhaustion proceeds, and does so in accordance with a geometrical series when the pressure diminishes in another geometrical series. The indices of the series are, however, generally different.—Magnetic susceptibilities of inorganic compounds, by S. Meyer. Judging from their compounds, the rare elements lanthanum, cerium, praseodymium, samarium, gadolinium, and especially erbium, must be strongly magnetic. Erbium oxide is four times as strongly magnetic as Fe_2O_3 , and if the conclusion as to their bases is correct, erbium must be, weight for weight, six times as strongly magnetic as iron. This would have an important practical signification if erbium were to be found in large quantities.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, October 16.—M. van Tieghem in the chair.—On the positions of equilibrium of a ship carrying liquid cargo, by M. Appell. The author develops a problem of M. Guyou, giving a means of finding the positions of equilibrium and discussing their stability.—Method of setting a collimator, by M. G. Lippmann. The slit is observed with an auxiliary telescope, and between this and the collimator a biplate is inserted. In general two images of the slit are observed, but on adjusting the collimating lens, at one point the two images coincide; the rays issuing from the collimator are now parallel. The accuracy of the adjustment is limited only by the resolving power of the telescope.—Production of ozone by the decomposition of water with fluorine, by M. Henri Moissan. A rapid current of fluorine, prepared in a copper apparatus, is passed

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. Hérissey. 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 *Engelina 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- $\alpha\alpha$ -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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