

intentions of the Government with regard to education. He said the Government are not pledging themselves to carry an Education Bill this session; their proposals are to be placed before the House of Commons with a view to their discussion. In the next session of Parliament it is hoped to pass the proposals—with such alteration as may have been thought expedient—into law. It is proposed to add considerably to the powers that local authorities already possess in educational affairs. The Government wish to induce everybody to cooperate so as to make the boy and girl better fitted to render the best possible service to the State. They wish to bring the best brains to the top, and to provide for those not included in that category an education from which they will get most advantage in connection with the factories, or the workshops, or whatever vocation they adopt in after life. Account must be taken of the conditions of youth from the cradle up to the universities, and all the nation's educational energies must be marshalled on a strategic plan. The Government's scheme is not going to be limited to an attempt to solve what Mr. Pease believes to be an insoluble denominational problem. The general principle of the Government's scheme is to secure that the best brains of the whole community should get to the top, and to provide a general diffusion of knowledge, so that we shall possess an educated democracy.

LORD HALDANE is to speak on the educational proposals of the Government at a joint meeting of teachers in secondary and technical schools, to be held at the University of London, South Kensington, on Saturday, March 29. The meeting is organised by the Association of Assistant Masters in Secondary Schools. The headmaster of Eton will preside, supported by Mr. Arthur Acland, and the following resolutions will be submitted:—"That this meeting welcomes the announcement that the Government proposes to deal in the near future with the question of education; hopes that the State will leave to the schools all reasonable freedom in such matters as time-table, curriculum, and careful educational experiments; and, with the object of attracting into the schools a sufficient supply of able and efficient teachers, urges that the increase of salaries and the provision of an adequate pension scheme should be a first charge upon any further grants for secondary and technical education." "That this meeting is of opinion that no pension scheme for secondary and technical teachers in England and Wales can be considered adequate which does not provide benefits approximately equal to those now secured to Scottish teachers."

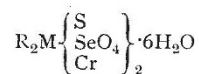
THE Institution of Mechanical Engineers has now established graduateship and associate membership examinations, and has published the rules which will govern the examinations. The institution has in this way decided to cooperate with other engineering societies in the endeavour to define and raise the status of the engineer. The examinations will be held in London twice annually, in April and October. The "graduate" is defined as a person, not under eighteen years of age, who has passed the graduateship examination or reached some exempting standard, and has satisfied the council that he has received or is receiving regular training as a mechanical engineer with the necessary practical and scientific experience. No person is to be elected a graduate after twenty-five years of age. The institution's examination for graduates covers English, elementary mathematics, and scientific knowledge, and matriculation and similar certificates exempt the candidate from the test. The associate membership examination is ordinarily for candidates of from twenty-five to thirty years of age, and covers

general, scientific, and technical knowledge. General knowledge includes an essay on some subject in literature, science, technology, or economics and workshop organisation; scientific knowledge is tested by papers in applied mathematics, physics, and chemistry; and a choice of two technical subjects must be made from seven specified. Several recognised examinations exempt candidates from the institution's associate membership examination, and for candidates over thirty years of age special arrangements are made.

## SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society**, March 13.—Sir Alfred Kempe, vice-president and treasurer, in the chair.—A. Mallock: A simple method of finding the approximate period of stable systems.—Prof. J. S. Townsend and H. T. Tizard: The motion of electrons in gases.—Prof. T. R. Lyle: The self-inductance of circular coils of rectangular section.—Dr. A. E. H. Tutton: Ammonium ferrous sulphate and its alkali-metal isomorphs. The author has added this salt to the thirty-six salts of the series



which he has previously investigated in a detailed manner, both morphologically and optically.—H. Thirkill: The re-combination of the ions produced by Röntgen rays in gases and vapours. Measurements, under widely varying conditions, of the coefficient of re-combination of the ions produced by Röntgen rays in gases and vapours have yielded the following results:—(1) Re-combination seems to take place according to the simple law  $dn_1/dt = dn_2/dt = -an_1n_2$ . (2) For a certain range of pressure, the coefficient of re-combination is proportional to the pressure.—Dr. W. Wahl: Optical investigation of solidified gases. III., The crystal-properties of chlorine and bromine. Crystallised chlorine and crystallised bromine are rhombic. Bromine is strongly pleochroic; chlorine less so. The absorption diminishes strongly when the temperature is lowered. The existence of a complete analogy in the crystalline characters of chlorine, bromine, and iodine has been established.—F. B. Pidduck: The abnormal kinetic energy of an ion in a gas. The abnormal rate of diffusion of negative ions in dry air, investigated by Townsend, would be explained if the negative ions had a velocity of agitation in excess of that of an equal number of molecules of the gas. The present paper investigates this from the point of view of the kinetic theory of gases.

**Geological Society**, February 26.—Dr. Aubrey Strahan, F.R.S., president, in the chair.—Dr. C. A. Matley: The geology of Bardsey Island (Carnarvonshire), with an appendix on the petrography by Dr. J. S. Flett. Bardsey, an island a mile and three-quarters long, lies off the promontory of the Lley (western Carnarvonshire), and forms the isolated extremity of the strip of pre-Cambrian rocks that borders the western coast of the Lley from Nevin south-westwards. The rocks are principally gritty schistose slates, with many thin and some thick bands of grit, quartzite, and limestone; and they contain an horizon of variolitic lava and tuffaceous shale, which indicates that a volcanic episode took place during their formation. Sills of albite-diabase also occur, as well as one or more sills of a crushed granite.—E. B. Bailey: The Loch Awe syncline (Argyllshire). This syncline is a comparatively shallow trough, with well-marked fan-structure due to small-scale isoclinal folding, in which the limbs of the folds are vertical along the axial



belt of the syncline, and inclined outwards on either side.

**Physical Society**, February 28.—Prof. A. Schuster, F.R.S., president, in the chair.—Prof. C. G. Barkla and G. H. Martyn: The authors have made a preliminary investigation of the Röntgen radiation proceeding from a crystal of rock salt (which is of the simple cubical form) when a pencil of Röntgen radiation is incident in a direction nearly grazing one of the three sets of mutually perpendicular cleavage planes. Reflection of X-rays by the cleavage planes.—Using a very narrow pencil of radiation, it was seen that the principal secondary pencil was one obeying the laws of reflections from the cleavage planes. A pencil diverging in all directions from a point source produced a corresponding reflected pencil of radiation converging to a line focus after reflection from a set of parallel cleavage planes. The quality of the radiation forming the secondary pencils was shown both by the photographic and by the ionisation method to be, not the fluorescent X-radiation, but of the kind previously described as scattered X-radiation. It was approximately of the same penetrating power as the primary radiation, and was approximately homogeneous, having traversed 5 mm. of rock salt in the case investigated. Interference fringe systems.—A diverging pencil of radiation was directed on to a crystal so that various portions were incident on the cleavage planes at different angles. A photographic plate showed the relative intensity of the corresponding reflected radiations. It was seen that the intensity of the reflected pencil varied periodically with varying angle of incidence, the maximum being separated by intervals corresponding to approximately equal increments in the value of  $\cos \theta$ , where  $\theta$  was the angle of incidence on the reflecting planes. Such a series of maxima may be explained by interference of the pencils reflected from equal spaced parallel planes, the maxima being spectra of various orders. The wave-length, calculated on the assumption that these are planes passing through corresponding portions of molecules in the planes of cleavage, and that a molecule is simply NaCl, is found to be  $0.6 \times 10^{-9}$  cm. If the molecule be more complex, the calculated wave-length would be greater. This value thus agrees remarkably well with the value (between  $1$  and  $2 \times 10^{-9}$  cm.) calculated from the velocity of ejection of electrons by this X-radiation, taking this to behave as ultra-violet light of short wave-length. There can be little doubt that the fringe systems are interference fringe systems. That the smaller system is a series of spectra of different orders and the other an interference band system seems probable; this theory certainly explains the results observed up to the time of writing.—Prof. E. Wilson: Alternating-current magnets. It follows from the well-known law of pull of an electromagnet that if the magnetic field alternates between positive and negative values the pull is unidirectional and intermittent. Unless means are provided to reduce the consequent chattering and vibration, the magnet is rendered useless. In the present experiments a phase-splitting device has been adopted, and consists in surrounding a portion of the pole-piece of the magnet with a short-circuited coil. The portion of the pole-piece so surrounded is sometimes said to be "shaded," and the coil referred to as a "shading" coil. The effect of this coil is to alter, not only the relative amplitudes, but the phase of the magnetic fields passing through the shaded and unshaded portions of the pole-face.

**Linnean Society**, March 6.—Prof. E. B. Poulton, F.R.S., president, in the chair.—Geoffrey Smith: The development and inheritance of sexual characters. (Discussion.)

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**Zoological Society**, March 4.—Dr. A. Smith Woodward, F.R.S., vice-president, in the chair.—Dr. F. E. Beddard: The anatomy and systematic arrangement of the Cestoidea. A new genus of tapeworms, of the family Ichthyotæniidæ, from the crossed viper (*Lachesis alternans*) was described.—Dr. W. A. Cunnington: The Branchiura collected by the third Tanganyika expedition in 1904-5. The collection contained more than 300 specimens, and proved that in the case of this group of animals also, Lake Tanganyika exhibits a number of endemic forms. While two species of Argulidæ are known to be widely distributed in the lakes of Africa, they are associated in Nyasa with a single form peculiar to that lake, but in Tanganyika with no less than seven new types. Tanganyika is thus shown to possess not only a considerable number of characteristic species, but a much richer Branchiuran fauna than the other great African lakes. The paper was illustrated by lantern-slides made from photomicrographs of the new species.—W. Schaun: Descriptions of a large number of new species of Rhopalocera from Costa Rica. More than 100 species had been collected, and of these fifty-four were found to be new.—Dr. A. Willey: Notes on plankton collected across the mouth of the St. Croix River, New Brunswick, in July and August, 1912.

**Mineralogical Society**, March 11.—Prof. H. L. Bowman, vice-president, in the chair.—W. Campbell Smith: The mineral collection of Thomas Pennant (1726-98). The collection, which has recently been presented to the British Museum by the Earl of Denbigh, is accompanied by three volumes of manuscript catalogue written in 1757. The classification used in them is based, with some modifications, on Woodward's "Natural History of the Fossils of England," published in 1729. Special mention is made of specimens presented by Borlase, Pontoppidan, and da Costa, and the minerals from Flintshire were treated in some detail. Several specimens were described by Pennant in "A Tour in Wales."—Arthur Russell: The minerals and mineral localities of Montgomeryshire. Of the species described the more remarkable are aurichalcite, from Llanymynech Hill Mine, Llanymynech; harmotome in double twins, associated with barytes and witherite, from Cwm-orog Mine, Llangynog; hydrozincite, which forms a remarkable recent deposit on the sides of a level in the Van Mine, Llanidloes; pyromorphite from Aberdeunant Mine, Llanidloes, and Llanerch-yr-aur Mine, Llanbrynmair; witherite, from Cwm-orog Mine, Llangynog, Gorn Mine, Pen-y-gaer Mine, and Pen-y-clyn Mine, Llanidloes, the crystals from the last being noteworthy on account of the almost entire suppression of the alternate faces of the pseudo-hexagonal prisms and pyramids.—Dr. G. F. Herbert Smith: A new stereographic protractor. The novelty consists of a curved ruler, made up of a combination of springs, which sensibly retains a circular curvature within the limits for which it is required. At the centre of the arc it is clamped to an arm, movable in a groove and carrying a scale, from which the azimuth of the corresponding great circle may be read off. The other edge of the protractor carries the usual tangent scales, from which the position of the compass to draw any circle up to the one corresponding to the great circle making an azimuth of  $50^\circ$  with the equatorial plane may be determined. The scales are based upon a radius of 10 cm.—L. J. Spencer: A (sixth) list of new mineral names.

**Royal Meteorological Society**, March 12.—Mr. C. J. P. Cave, president, in the chair.—R. G. K. Lempfert: Weather forecasts: past and present. For the preparation of forecasts, information is now received at



the Meteorological Office each day by telegraph from thirty British stations, and from forty on the continent of Europe and the islands of the North Atlantic. Information from thirty stations is, however, quite inadequate for checking the accuracy of the forecasts. For this purpose results from more than 130 stations are used. The forecasts are checked separately for wind and weather, the term weather being considered in regard to (1) temperature; (2) precipitation; (3) cloudiness or the reverse; (4) fog. The extension of the period covered by the forecasts for "further outlook" was described, and the application of this to the notification of probable spells of fine weather which the Meteorological Office now issues to farmers during the summer.

**Mathematical Society**, March 13.—Prof. Love, president, in the chair.—H. M. Macdonald: The diffraction of light by an opaque prism.—S. Lees: The natural radiation from transparent media.—L. J. Mordell: Indeterminate equations of the third and fourth degrees.—A. Cunningham: Mersenne's numbers.—J. Proudman: (1) A two-dimensional potential problem with applications to hydrodynamics and elasticity; (2) tidal motion in rotating sheets of water.

**Royal Astronomical Society**, March 14.—Major E. H. Hills, C.M.G., F.R.S., president, in the chair.—H. F. Newall and F. J. M. Stratton: Enhanced lines in the early spectrum of Nova Geminorum No. 2. The elements most strongly represented by these lines are titanium and iron; a number of other elements were indicated with less certainty. Two well-known bands frequently ascribed to helium were considered by the authors to be enhanced lines of iron.—F. W. Dyson: The distribution in space of the stars of Carrington's circumpolar catalogue. This catalogue contains practically all the stars of the Bonn Durchmusterung within  $9^\circ$  of the north pole. The paper dealt at length with the proper motions of the stars, the proper motions being based on those determined in connection with the Greenwich astrographic work.—A. S. Eddington: The distribution in space of the bright stars. The stars considered were those brighter than 5.8 magnitude. Stars of the spectral types A and K were separately dealt with, and in each case results were obtained for two regions, one typical of high galactic latitudes and one of low.—Major Hills and F. C. H. Carpenter: Results of observations with the Durham almucantar during 1912. The results on the whole were not very encouraging, as there are two errors which are peculiar to all floating instruments—the temperature gradient and the unsteadiness of the telescope. These may be reduced, but it does not seem possible to eliminate them; the almucantar thus seems an inferior instrument to the transit circle.—R. S. Capon: Note on the possibility of refraction in the solar atmosphere (papers of the International Union for Solar Research, No. 8).

## CAMBRIDGE.

**Philosophical Society**, February 10.—Dr. Shipley, president, in the chair.—G. R. Mines: Note on the respiratory movements of *Torpedo ocellata*. A method for recording the frequency and amplitude of rhythmic movements over prolonged periods of time is described. The respiratory movements of elasmobranch fishes are known to be of two kinds, the ordinary breathing movements interrupted by occasional "spouting movements." The spouting movements can be produced with ease by the slightest irritation of the inside of the pharynx, as by the introduction of foreign particles with the water. It has therefore been supposed that whenever the spouting movements are observed they indicate the entry of some foreign object with the

inspired water. Experiments made with the apparatus referred to above show that the spouting movements have a tendency to recur at rhythmic intervals. The period of this rhythm is often as long as two to five minutes, but sometimes it is shorter. The modifications it undergoes in response to changes in the environment suggest that the nerve cells controlling the movements have themselves a tendency to discharge rhythmically.—F. A. Potts: The swarming of *Odontosyllis*. The appearance of great numbers of sexually mature individuals of *Odontosyllis phosphorea* was observed on the surface of the sea near Nanaimo, Vancouver Island, in the years 1911 and 1912, during four days in the latter part of August. The swarming begins before sunset, lasts nearly an hour, and is almost over before it is quite dark. A comparison was drawn with *O. enopla* from the Bermudas, described by Galloway and Welch, in which the time of swarming is a little later and phosphorescence is so greatly developed as to be used as a method of sexual recognition. Only in the case of the insects elsewhere has luminosity been proved to possess an adaptive significance.—S. R. Price: Observations on *Polyporus squamosus*. *Polyporus squamosus*, Huds., is a well-known timber-destroying fungus, frequent on many species of our trees. The artificial culture of the fungus on sterilised wood blocks was described for the first time.—R. H. Rastall: Note on the composition of some Pleistocene sands near Newmarket.

## MANCHESTER.

**Literary and Philosophical Society**, February 18.—Prof. F. E. Weiss, president, in the chair.—Prof. G. Elliot Smith: The Sussex skull and its brain-cast. Plaster copies were shown of the fragments of the Sussex skull and the cast made from them to represent the formation of the brain. An account of our present knowledge of ancient man was given in order to illustrate the importance of the new information supplied by the Sussex remains.

March 4.—Prof. F. E. Weiss, president, in the chair.—A. D. Hall: The plant and the soil. The plant takes but a very small portion of its substance out of the soil, but that little is indispensable. Growth especially depends upon the supply of nitrogen, phosphoric acid, and potash, and the function of a manure is to supply the deficiencies of an ordinary soil in one or more of these substances. These substances having to be in solution before entering the plant, one had to conceive of the water which is always present in the soil in a thin film coating the soil particles as a nutrient solution containing more or less of the materials determining the plant's rate of growth. Compounds of phosphoric acid and potash present in the soil possess but a very slight solubility, and the soil solution would become saturated to its utmost capacity even though the soil contained much less phosphoric acid and potash than are ever found in cultivated land. The acceptance of this view prevents the difference between good and bad soil being attributed to any difference in the amount of phosphoric acid and potash in the soil; moreover, additions of these substances could not directly stimulate the nutrition of the plant. This hypothesis had then to face the well-known fact that the yield of crops on particular soils could be greatly increased by certain manures, namely phosphates. American investigators propounding this theory suggest that the manure acts by precipitating and putting out of action certain injurious substances excreted by the roots of the plants. The value of proper aeration of roots was demonstrated, and results of wheat- and barley-growing experiments given. The theory of the indifference of the plant to the amount of nutrients in the soil was found to be untenable.



## EDINBURGH.

**Royal Society**, February 17.—Dr. Horne, F.R.S., vice-president, in the chair.—Helen Pixell: Polychæta of the families Serpulidæ and Sabellidæ, collected by the Scottish National Antarctic Expedition. Eight genera were represented in the collection, including four new species, one in Apomatus, two in Spirorbis, and one in Potamus.—Dr. J. R. Milne and H. Levy: The recording of fluctuating flow: its difficulties and errors. Owing to the inertia of its moving parts, any instrument employed to record either "instantaneous values" or the "time integral of a fluctuating quantity" is liable to err. The extent of this error is in many cases unknown, e.g. in the case of a Robinson cup anemometer; and the present paper describes some experiments made with an analogous instrument to elucidate the matter. From the results obtained it appears that fluctuation in the flow causes the instrument to read too high.

March 3.—Prof. Bower, F.R.S., vice-president, in the chair.—Dr. R. A. Houstoun, A. H. Gray, and C. Cochrane: The absorption of light by inorganic salts (three concluding papers of a series). No. IX. dealt with salts of copper, cobalt, and nickel dissolved on alcohol and acetone, and described a successful attempt to apply the mathematics of mass action to the change of colour in an alcoholic solution of cobalt bromide when water was added. No. X. was occupied more particularly with the bearing of new methods on the old controversy of the colour of the ions, and it was shown conclusively that the colour changes of the cobalt, nickel, and copper salts have nothing whatever to do with ionisation. In No. XI. Dr. Houstoun discussed the theoretical aspect of the results gained and the present state of research in the field.—Dr. G. A. Carse, G. Shearer, and H. Jameson: Note on a comparison of records of atmospheric potential at two stations in Edinburgh. The two stations were the Physical Laboratory of the University and the Royal Observatory, Blackford Hill. A large number of records were compared, and the curves for the two stations showed in general good agreement, the agreement being best in those which indicated a disturbed state of the atmosphere. This is interesting when it is considered that the University is in the centre of the town and the observatory in the clearer air of the outskirts, nearly two miles distant.

## DUBLIN.

**Royal Dublin Society**, February 25.—Prof. J. Wilson in the chair.—Dr. G. H. Pethybridge: The rotting of potato tubers by a new species of *Phytophthora* having a method of sexual reproduction hitherto undescribed. A new form of rot in potato tubers is described, in which the cut surface of affected tubers when exposed to air turn at first pink and afterwards nearly black. The causative organism is a new species of *Phytophthora*, to which the name *P. erythroseptica* is given. Sexual organs are produced when the fungus is grown artificially as a saprophyte, and probably also in nature. At an early stage in its development the young oogonium penetrates the antheridium at or near the base of the latter, grows up through it, bursts out at the summit, where it swells to form the oogonium proper, in which the oosphere and oospore develop. Fertilisation, if it takes place at all, probably occurs while the oogonial incept is within the antheridium, and hence before the formation of the oosphere. The sexual organs of *P. Phaseoli*, *P. infestans*, and probably *P. omnivora*, var. *Arecae* are developed in a similar manner, but those of *P. cactorum*, *P. fagi*, *P. Syringae*, and probably others, follow the usual course, where the antheridium penetrates the oogonium laterally. Species which follow this latter

method are removed from the genus *Phytophthora*, and are placed in a new one, to which the name *Nozemia* is given.—Dr. G. H. Pethybridge and P. A. Murphy: Pure cultures of *P. infestans*, de Bary, and the development of oospores. An account is given of the cultivation of *P. infestans* as a saprophyte on various media, on some of which (Oat-Agar and Quaker Oat-Agar) sexual organs are developed. Clinton's discovery of undoubted oospores is confirmed, and the mode of their formation is explained by the process occurring in *P. erythroseptica*.—Prof. J. Wilson: Inter-alternative as opposed to coupled Mendelian factors: a solution of the agouti-black colour in rabbits. This is an alternative solution to that given by Prof. Punnett in the November (1912) number of *The Journal of Genetics* as to the agouti-black colour in rabbits. Prof. Punnett found three factors acting conspicuously. On the "presence and absence" theory each of these must have its "absence." Thus there were six in all, and to meet the case two of the three prominent factors had to be coupled. The author finds that there are five factors operating in the case, viz. three dominants and two recessives, but that two of the dominants, and one of the recessives are inter-alternatives—that is, any one of the three can alternate with either of the other two, just as happens with the black, white, and red colours of cattle, or with the colours of horses.—E. G. Fenton: Notes on recent pampa and other formations in Patagonia. The author, from his traverses of southern Patagonia, brings forward evidence of widespread glacial and ice-sheet conditions at the close of Pliocene times, followed by a long inter-glacial interval, during which extensive outpourings of lava and emission of exploded materials occurred. This interval, which may have lasted for some thousands of years, was followed by a more local glaciation, when the Andes sent glaciers into the lowlands. The author believes that elevation of the area is now in progress.

## PARIS.

**Academy of Sciences**, March 3.—M. F. Guyon in the chair.—B. Baillaud: The publication of certain works of the Paris Observatory.—A. Lacroix: The mineralogical constitution of the Los Archipelago (Guinea).—Paul Sabatier and A. Mailhe: A catalytic method of isomerising the alkyl chlorides and bromides. Chloride of barium or chloride of thorium at 250° C. decompose the alkyl chlorides and bromides into acid and ethylenic hydrocarbon. If this mixture is passed over pumice in the same tube heated to 200° C. these gases re-combine, giving secondary and tertiary alkyl halides. Examples of the application of the method are given.—Charles Depéret: Observations on the Pliocene and Quaternary geological history of the Gulf and Isthmus of Corinth.—M. Barbier was elected a correspondant for the section of chemistry in the place of the late M. Ladenburg.—Charles Nordmann: The light yield of a black body at high temperatures and on that of the stars. First application to Arcturus and Vega. By the application of Planck's and Stefan's laws it is shown that the light yield of a radiating body increases with the temperature to a maximum and then decreases. As a first approximation this temperature is found to be 6430° C., very nearly that found by various methods for the sun. The effective temperature of Arcturus is deduced as 3400° C., and Vega is 2.2 times as great.—M. Tzitzeica: Derived reciprocal networks.—J. Le Roux: The determination of the harmonic functions. Application to the square.—Mlle. Th. Tarnarider: The best approximation of  $|x|^{2s+1}$  by polynomials of indefinitely increasing degrees.—Jacques Chapelon: The numbers of classes of positive binary quadratic forms.



—**Et. Delassus** : The equilibrium and small movements of systems submitted to linkages of any order whatever.—**André Blondel** : The internal power and synchronising couple of synchronous alternators working on a network at constant potential or in parallel.—**Casimir Cépède** : A new method of mounting microscopic preparations permitting the study of both faces of the section under the strongest magnifications, and doing away with the necessity of special methods of packing. A hole is bored in the glass slide in such a manner that the object can be imbedded between two cover glasses. This allows either side to be examined, and the slides can be packed vertically in contact with each other without danger of damaging the section.—**Pierre Goby** : A new application of the X-rays: microradiography. The apparatus described and figured gives an enlarged radiogram of small objects. Illustrations are given of radiograms from twelve to seventeen times the diameter of the original objects.—**G. Reboul** : Capillary phenomena in gases. Extension of the Laplace formula to solid-gas contact.—**Marcel Boll** : The energy absorbed and mass formed in a photochemical reaction. A study of the conductivity of a very dilute solution of chloroplatinic acid under the influence of a monochromatic radiation.—**André Kling** and **D. Florentin** : The action of low temperatures on explosives. The handling and opening of explosive bombs has frequently to be undertaken in the Paris Municipal Laboratory, and experiments have been made to see if the force and velocity of detonation of various explosives can be reduced by cooling to the temperature of liquid nitrogen. It has been found that the sensibility of some explosives and detonators is reduced by cooling, but when explosion takes place the force of the explosion is not affected by the low temperature.—**Victor Henri** and **Marc Landau** : Study of the absorption of the ultra-violet rays by acetylene. Tables are given showing the positions of the bands produced by the gas and by its solutions.—**Witold Broniewski** : The critical points of iron. Heating curves are given for electrolytic iron and also the results of measurements of the thermo-electric power, electrical resistance, expansion, and thermal points.—**L. Guillet** and **A. Portevin** : Some properties of a commercial electrolytic iron. In this metal no carbon, manganese, silicon, or sulphur could be detected. It contained phosphorus 0.025 per cent., and arsenic 0.011 per cent. Determinations were made of its critical points, and two microphotographs are reproduced.—**H. Pélabon** : Study of the system antimony sulphide, lead sulphide. Definite compounds were shown by the existence of transition points and confirmed microscopically.—**Daniel Berthelot** and **Henry Gaudichon** : A levulose actinometer for ultra-violet light. The influence of the concentration on the velocity of the photochemical reaction. In weak solutions the absorption is slight and is proportional to the concentration; in concentrated solutions the absorption is total, and does not increase with the concentration.—**MM. Lespieau** and **Bresch** : The action of  $\alpha$ - $\beta$ -dichloroethyl ether on mixed magnesium derivatives.—**Pierre Jolibois** : Methyl-magnesium iodide. By the action of heat on methyl-magnesium iodide a substance is obtained of the composition  $MgI_2 \cdot Mg_2C$ . This is attacked by water, nearly pure methane being evolved.—**André Meyer** : "Halochromy" in the derivatives of phenylisoxazolone and in its indogenides.—**Albert Michel-Lévy** : The eruptive rocks of the Lyonnais.—**M. Mazé** : The relation which exists between the water evaporated and the weight of plant material elaborated by maize.—**Eug. Rousseaux** and **Maurice Sirot** : Soluble nitrogenous material as a factor in valuing flour. In a good flour the ratio between the total nitrogen and the soluble nitrogen should not fall below a certain

figure. A low ratio corresponds with bad bread-making properties.—**A. Demolon** : Researches on the fertilising action of sulphur. The fertilising action of sulphur may be attributed to its action on the micro-organisms of the soil and also to its progressive oxidation to sulphuric acid.—**L. C. Soula** : The activity of the nervous centres and nitrogen catabolism of the nerve substance.—**Raphael Dubois** : The nature and development of the light organ of *Lamprolaima noctiluca*.—**Gabriel Bertrand** and **H. Agulhon** : The presence of boron in the animal kingdom. The authors conclude that boron exists normally in very small proportions in all animals. The amount is greatest in animals of marine origin.—**Henri Stassano** : Contribution to the knowledge of the plasma of propeptone.—**H. Maurice** : The results given by captive balloons north of the polar circle. Temperatures are given on the ground and at varying heights up to 20,000 metres.—**E. A. Martel** : Study of the temperatures of subterranean waters.

## BOOKS RECEIVED.

- Household Bacteriology for Students in Domestic Science. By E. D. Buchanan and Prof. R. E. Buchanan. Pp. xv+536. (London: Macmillan and Co., Ltd.) 10s. net.
- Bücher der Naturwissenschaft. Band 15, Vom Keim zum Leben. By Prof. K. Lampert. Pp. 198+xii plates. (Leipzig: P. Reclam, jun.) 1 mark.
- Government of India. Department of Revenue and Agriculture. Agricultural Statistics of India for the Years 1906-7 to 1910-11, in 2 vols. Vol. ii., Native States. Pp. 123. (Calcutta: Superintendent Government Printing, India.) 1s. 6d.
- Garden Work: a Practical Manual of School Gardening. By W. Good. Pp. xvi+399+plates. (London: Blackie and Son, Ltd.) 3s. 6d. net.
- Die Methoden der exakten, quantitativen Bestimmung der Alkaloide. By Prof. A. R. von Korczynski. Pp. iv+82. (Berlin: Gebrüder Borntraeger.) 3.50 marks.
- Osmotic Pressure. By Prof. A. Findlay. Pp. vi+84. (London: Longmans and Co.) 2s. 6d. net.
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