

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The following is an extract from the speech delivered at the Encaenia on the presentation of F. D. Godman, F.R.S., Trustee of the British Museum, for the degree of D.C.L., June 21.

“In ea Naturae parte quae ad animalium herbarumque varietates pernoscendas spectat neminem vel diligentius vel utilius hoc viro laborasse scitote.

Ille enim, scientiae amore instigatus, Americae quae dicitur centralis saltus silvasque una cum amico suo caro Osberto Salwino (nuper fato eheu! nobis abrepto) longis pererravit peregrinationibus atque fruges fetusque omnes ejus orbis terrarum partis adcurate investigavit.

Nec illud tacendum arbitrator eundem diversi generis species illic ab ipso cura infinita collectas quum rarissimas tum etiam pretiosissimas singulari munificentia Museo nostro Britannico donasse.”

THE Committee of the City and Guilds of London Institute are inviting applications for the appointment of Assistant Professor in the Department of Civil and Mechanical Engineering at the Institute's Central Technical College. Particulars of the appointment may be had of the Honorary Secretary of the Institute, Gresham College, E.C.

THE Board of Education Bill was considered by the House of Commons Committee of Ways and Means on Tuesday. It was resolved “That it is expedient to authorise the payment, out of moneys to be provided by Parliament, of a salary, not exceeding 2000*l.*, to the president of the Board of Education, and of salaries and remuneration to the secretaries, officers, and servants of the Board, in pursuance of any Act of the present Session to provide for the establishment of a Board of Education for England and Wales.”

MAJOR-GENERAL SIR JOHN F. D. DONNELLY, K.C.B., retired on Monday from the Secretaryship of the Science and Art Department, after forty years in the public service. In consequence of Sir J. Donnelly's retirement, the Duke of Devonshire, Lord President of the Council, has made the following appointments:—Sir George W. Kekewich, K.C.B., the present Secretary of the Education Department, to be also Secretary of the Science and Art Department. Captain W. de W. Abney, C.B., to be the Principal Assistant Secretary of the Science and Art Department. Mr. W. Tucker, C.B., to be the Principal Assistant Secretary of the Education Department.

THE Duke and Duchess of York visited Exeter on Tuesday and opened a new wing of the Albert Memorial Museum and College. The Museum became affiliated with the Cambridge University several years ago, when the Exeter Technical and University Extension College was started, with Mr. A. W. Clayden as principal. This institution, to be known in future as the Royal Albert Memorial Museum and College, is now sufficiently equipped for the requirements of a local college. In opening the new wing, the Duke of York remarked that the efficient results attained at Exeter and also at Reading seem to indicate that it is possible for the municipal authorities of towns of moderate size to establish, with the co-operation of the great universities, institutions providing for higher and technical instruction. The co-operation of the universities, with their expert knowledge, and the local authorities with their control of funds for educational purposes and their practical knowledge of local needs, cannot fail to be of the greatest advantage to the community from an educational standpoint.

SCIENTIFIC SERIALS.

Meteorologische Zeitschrift, June.—On the amount of cloud in Europe during cyclonic and anticyclonic days, by Dr. C. Kassner. In this important discussion the author has investigated the cloud observations at five principal stations in Europe for twenty years (1871–90), and has followed a plan adopted by Dr. Leyst in another discussion by selecting the days in each month when the readings of the barometer were lowest or highest. These days, including the days preceding and following that on which the extreme reading occurred, are those called respectively cyclonic or anticyclonic periods. He finds that in

cyclonic periods the maximum amount of cloud only occurs on the principal day in summer and autumn, while in winter and spring a large amount of cloud occurs in the evening of the preceding day as well as on the morning of the principal day. The preceding day has generally somewhat less cloud than the principal day, and almost always more than the following day. This result agrees with that deduced by the late Mr. Ley, and by the Deutsche Seewarte with respect to the distribution of cloud in cyclones. In anticyclonic periods the least cloud frequently occurs, not on the principal day, but on the preceding or following day; this is especially the case at Christiania and Pavlovsk, where the least cloud occurs before the passage of the highest barometric pressure, and then gradually increases. Generally speaking, however, the principal day is clearest, and next to this the preceding day, but not always, for at Budapesth and Tiflis the day following that of the maximum barometric pressure has less cloud than the day preceding.

Bollettino della Società Sismologica Italiana, vol. iv., 1898, No. 9.—Old seismic instruments, by P. Tacchini, referring to an old form of the Cecchi seismograph and to Cacciatore's mercury seismoscope, recently acquired by the Central Office of Meteorology and Geodynamics at Rome, and which, with others already in the possession of the office, will form the nucleus of a seismometrical museum.—Principal eruptive phenomena in Sicily and the adjacent islands during the half-year July to December 1898, by S. Arcidiacono.—Later modifications in the electrical seismoscope of double effect, by G. Agamennone. Describes several improvements by which the instrument may be put more rapidly in working order.—Notices of earthquakes recorded in Italy (December 25 to 31, 1897), by G. Agamennone, the most important being an after-shock of the Umbria-Marches earthquake of December 27, and the Haiti earthquake of December 29.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 15.—“The Colour Sensations in Terms of Luminosity.” By Captain W. de W. Abney, C.B., D.C.L., F.R.S.

This paper deals with a determination of the colour sensations (based on the Young theory) by measuring the luminosity of the three different colour components in a mixed light which matches white. At the red end of the spectrum there is but one colour extending from its extreme limit to near C, and there is no mixture of other colours which will match it, however selected, and is, on the theory adopted, a colour which excites but one sensation. At the violet end of the spectrum, from the extreme violet to near G, the same homogeneity of light exists, but it is apparently due to the stimulation of two sensations, a red and a blue sensation, the latter never being stimulated alone by any spectrum colour. Having ascertained this, it remained to find that place in the spectrum where the blue sensation was to be found unmixed with any other sensation except white. By trial it was found that close to the blue lithium line this was the case, and that a mixture of this colour and pure red sensation gave the violet of the spectrum when the latter was mixed with a certain quantity of white. The red and the blue sensation being located, it remained to find the green sensation. The complementary colour to the red in the spectrum gave a position in which the green and blue sensations were present in the right proportions to make white, and a point nearer the red gave a point in which the red and blue sensations were present in such proportions as found in white, but there was an excess of green sensation. By preliminary trials this point was found. The position in the spectrum where the yellow colour complementary to the violet was also found. The colour of bichromate of potash was matched by using a pure red and the last-named green. To make the match, white had to be added to the bichromate colour. A certain small percentage of white was found to exist in the light transmitted through a bichromate solution with which the match was made, and this percentage and the added white being deducted from the green used, gave the luminosity of the pure green sensation existing in the spectrum colour which matched the bichromate. Knowing the percentage composition in luminosity of the two sensations at this point, the luminosity of the three sensations in white was determined by

matching the bichromate colour with the yellow (complementary to the violet) and the pure red colour sensation. From this equation and from the sensation equation of the bichromate colour already found, the sensation composition of the yellow was determined. By matching white with a mixture of the yellow and the violet, the sensation equation to white was determined. The other colours of the spectrum were then used in forming white, and from their luminosity equations their percentage composition in sensations were calculated. The percentage curves are shown. The results so obtained were applied to various spectrum luminosity curves, and the sensation curves obtained. The areas of these curves were found, and the ordinates of the green and violet curves increased, so that both their areas were respectively equal to that of the red. This gave three new curves in which the sensations to form white were shown by equal ordinates.

A comparison of the points in the spectrum where the curves cut one another, and of those found by the red and green blind as matching white, show that the two sets are identical, as they should be. The curves of Koenig, drawn on the same supposition, are mentioned, and the difference between his and the new determination pointed out.

The red below the red lithium line, as already pointed out, excites but one (the red) sensation, whilst the green sensation is felt in greatest purity at λ 5140, and the blue at λ 4580, as at these points they are mixed only with the sensation of white, the white being of that whiteness which is seen outside the colour fields.

"A Comparison of Platinum and Gas Thermometers, including a Determination of the Boiling Point of Sulphur on the Nitrogen Scale: an Account of Experiments made in the Laboratory of the Bureau International des Poids et Mesures, at Sèvres." By Drs. J. A. Harker and P. Chappuis. Communicated by the Kew Observatory Committee.

The present paper is the outcome of the co-operation of the Kew Observatory Committee and the authorities of the International Bureau of Weights and Measures at Sèvres, for the purpose of carrying out a comparison of some platinum thermometers with the recognised international standards.

A new resistance-box, designed for the work, and special platinum thermometers together with the other accessories needed were constructed for the Kew Committee, and, after their working had been tested at Kew, were set up at the laboratory at Sèvres in August 1897. The comparisons executed between these instruments and the standards of the Bureau may be divided into several groups. The first group of experiments covers the range -23° to 80° , and consists of direct comparisons between each platinum thermometer and the primary mercury standards of the Bureau. Above 80° the mercury thermometers were replaced by a gas-thermometer, constructed for measurements up to high temperatures. The comparisons between 80° and 200° were made in a vertical bath of stirred oil, heated by different liquids boiling under varying pressures. For work above 200° a bath of mixed nitrates of potash and soda was substituted for the oil tank. In this bath comparisons of the two principal platinum thermometers with the gas-thermometer were made up to 460° ; and with a third thermometer, which was provided with a porcelain tube, we were able to go up to 590° . Comparisons of the platinum and gas-scales were carried out at over 150 different points, each comparison consisting of either ten or twenty readings of the different instruments.

By the intermediary of the platinum thermometers a determination of the boiling point of sulphur on the nitrogen scale was also made. The mean of three very concordant sets of determinations with the different thermometers gave $445^{\circ}27$ as the boiling point on the scale of the constant volume nitrogen thermometer, a value differing only about $0^{\circ}7$ from that found by Callendar and Griffiths for the same temperature expressed on the constant pressure air scale.

If for the reduction of the platinum temperatures in our comparisons we adopt the parabolic formula proposed by Callendar, and the value of δ obtained by assuming our new number for the sulphur-point, we find that below 100° the differences between the observed values on the nitrogen scale and those deduced from the platinum thermometer are exceedingly small, and that even at the highest temperatures the differences only amount to a few tenths of a degree.

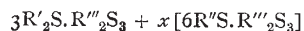
Full details as to the instruments employed and the methods adopted are given in the paper.

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"On the Comparative Efficiency as Condensation Nuclei of positively and negatively charged Ions." By C. T. R. Wilson, M.A. Communicated by the Meteorological Council.

When moist air is ionised, a greater degree of supersaturation is required to cause water to condense on the positively charged ions than on the negatively charged ones. The experiments consisted in measurements of the expansion required to cause condensation in the form of drops in air initially saturated and containing ions alternately nearly all positive and nearly all negative. The ratio of the final to the initial volume being indicated by v_2/v_1 , then to cause water to condense on negatively charged ions, the supersaturation must reach the limit corresponding to the expansion $v_2/v_1 = 1.25$ (approximately a fourfold supersaturation). To make water condense on positively charged ions, the supersaturation must reach the much higher limit corresponding to the expansion $v_2/v_1 = 1.31$ (the supersaturation being then nearly sixfold). Thus, if ions ever act on condensation nuclei in the atmosphere, it must be mainly or solely the negative ones which do so, and thus a preponderance of negative electricity will be carried down by precipitation to the earth's surface. Experiments were carried out which appear to prove that the difference in the condensing power of positive and negative ions is not to be explained by supposing the charge of each negative ion to be, for example, twice as great as that of each positive ion. Experiments were also tried to test whether the rainlike condensation, which always takes place in moist air when the expansion $v_2/v_1 = 1.25$ is exceeded, is due to slight ionisation of the moist air. These experiments led to the conclusion that this is not a case of condensation on ions; unless the process of producing the supersaturation itself gives rise to ionisation.

Mineralogical Society, June 20.—Prof. A. H. Church, F.R.S., President, in the chair.—Mr. E. G. J. Hartley gave the results of analyses of so-called plumbogummite from Roughten Gill, Georgia, and Huelgoat. The blue mineral from Roughten Gill, usually regarded as a silicate or carbonate of zinc, proved to be identical with the hitchcockite from Georgia. Both minerals have been analysed by Mr. Hartley, and shown to contain about 19 per cent. of water and 3 per cent. of carbonic acid. In a note on the optical characters, Prof. Miers finds that these two minerals present absolutely the same appearance under the microscope, and differ somewhat from the only other known hydrated lead aluminium phosphate, viz. the plumbogummite from Huelgoat in Brittany. Mr. Hartley's analyses of this mineral differ from those of Damour, and shows that it has by no means the same composition as hitchcockite, and it is therefore considered to be a distinct species.—Mr. H. L. Bowman gave a detailed description of the optical crystallographic and chemical characters of a clear green rhombic pyroxene from the diamond-washings of South Africa.—Messrs. G. T. Prior and L. J. Spencer contributed a paper on the chemical composition of tetrahedrite. In a previous investigation proving the specific identity of the rare mineral binnite with tennantite, the numbers obtained in the analysis, like those of several older analyses of tennantite, agreed much more closely with the formula $3\text{Cu}_2\text{S}.\text{As}_2\text{S}_3$ than with the ordinary text-book formula $4\text{Cu}_2\text{S}.\text{As}_2\text{S}_3$, originally proposed by Rose. In the present communication the authors describe the physical and chemical characters of three specimens of tetrahedrite. The result of the analyses made by Mr. Prior is to confirm the idea that the true formula for tetrahedrite proper is $3\text{Cu}_2\text{S}.\text{Sb}_2\text{S}_3$, and also to show that when iron and zinc are present they enter into the composition of the crystals not as $3(\text{Fe},\text{Zn})\text{S}.\text{Sb}_2\text{S}_3$, but as $6(\text{Fe},\text{Zn})\text{S}:\text{Sb}_2\text{S}_3$, in which $6(\text{Fe},\text{Zn})\text{S}$ isomorphously replaces $3\text{Cu}_2\text{S}$. The proposed general formula for fahlerz (tetrahedrite and tennantite) is accordingly



where $\text{R}' = \text{Cu}, \text{Ag}$; $\text{R}'' = \text{Sb}, \text{As}, \text{Bi}$; $\text{R}''' = \text{Fe}, \text{Zn}$, and x is generally a small fraction, rising, however, to $\frac{1}{2}$ in the case of the highly ferriferous tetrahedrite "coppite."—Mr. L. Fletcher described the chemical analysis of a constituent of the meteoric iron of Youndegin, Western Australia, and gave an account of the fall of meteoric stones at Mount Zomba, British Central Africa, on January 25, 1899.—Mr. Herbert Smith pointed out the specific identity of the new oxychloride of lead paralaunite, described by him in April 1898, with the new mineral rafaélite, a description of which by the late Dr. Arzruni has just been published.

Geological Society, June 21.—W. Whitaker, F.R.S., President, in the chair.—On a series of agglomerates, ashes, and tuffs in the Carboniferous Limestone series of Congleton Edge, by Walcot Gibson and Dr. Wheelton Hind. With an appendix on the petrography of the igneous rocks, by H. H. Arnold-Bemrose. After referring to the discovery of volcanic rocks in the upper part of the Carboniferous Limestone series at Tissington, the authors proceed to describe evidence of volcanic action of the same age on the western slopes of Congleton Edge.—On some ironstone fossil nodules of the Lias, by E. A. Walford.—Additional notes on the glacial phenomena of Spitsbergen, by E. J. Garwood. This paper contains the results of additional observations on the ice of Spitsbergen made by the writer in 1897. The inland ice visited occupies two distinct areas, separated by Dickson's Bay and Wijde Bay. The radiating point lies somewhat north-west of the centres of each area, with supplementary radiating points on the north and east. The group of peaks including the Three Crowns may be regarded as nunatakk. The valley-bound ground-ice does not necessarily travel in the same direction as that of the surface. The effect of nunatakk on the surface of the ice-sheet was studied, and from this it was often found possible to infer the existence and position of buried mountain-ridges. On the *stoss-seite* of a nunatak moraine-material is often discharged. The movement of the ice has frequently converted the ice-bridges across crevasses into arches and tunnels, some of which carry part of the drainage of the ice-sheet. Portions of old stranded ground-moraines, formed when the ice was more extensive, were sometimes found to have fallen upon the lowered ice-sheet, and to be mingled with modern moraine-material. Englacial and superficial rivers are described, and one of the latter was found to be depositing gravelly material along a line at right angles to the valley down which the ice was flowing. Certain observations on the rate of movement of the ice-sheet seem to indicate that this is not less than fifteen to twenty feet in twenty-four hours; while the glaciers near the sea-margin appear to be travelling about twenty-five feet in the same time. The action of sea-ice is described, and it is inferred that a certain amount of rounding and scratching of shore-rocks, and possibly part of the smoothing of boulders, may be due to this agent.—Additional notes on the vertebrate fauna of the rock-fissure at Ightham (Kent), by E. T. Newton, F.R.S.

Royal Microscopical Society, June 21.—Mr. E. M. Nelson, President, in the chair.—The President exhibited an old $\frac{1}{8}$ -inch objective made by Andrew Ross, which had been presented to the Society by the Master of the Rolls. It was a rare form of objective, constructed probably about the year 1838, and possessed a very primitive form of adjustment. A special interest was attached to it because it formerly belonged to the father of the donor, Prof. John Lindley, the second President of the Society (1842-43).—The President also exhibited a new coarse adjustment which Messrs. Watson had made in accordance with a suggestion contained in his paper read before the Society in March last. It showed that with a loose pinion it was possible to have a rack coarse adjustment that would work without "loss of time."—A paper by Mr. Jas. Yate Johnson, entitled "Notes on some sponges belonging to the Clonidæ obtained at Madeira," was taken as read. Six slides of Spiculæ, &c., in illustration of the paper, were exhibited under microscopes.—The President called the attention of the Fellows present to an exhibition by Mr. Beck of parts of various wild flowers shown with low powers.—This was the last meeting of the session, and the President announced that the first meeting after the vacation would be on October 18.

EDINBURGH.

Royal Society, June 5.—Sir Arthur Mitchell in the chair.—A note by Dr. Thomas Muir, on a persymmetric eliminant, was taken as read.—Dr. A. T. Masterman read a paper on contributions to the life-histories of the cod and the whiting. The paper was illustrated by numerous diagrams tracing the successive stages of development from lengths of 3 mm. to lengths of 25 mm. There was found to be a greater abundance of pigment in young whiting, and the body shows a characteristic pigmented lateral line. The migration of the young of each species shorewards was also studied. In the case of the cod the transition was very marked from surface to mid-water, and thence to the littoral region. Thus the limiting length of surface forms was 17 mm., of mid-water forms a little over 25 mm., and later

forms were all found in the littoral regions. No attempt has as yet been made to trace outward migration, if there be any. As had already been pointed out by Prof. McIntosh, the migration of the whiting was much more indefinite. Sufficient causes for these migrations had not yet been satisfactorily made out.—Dr. Hugh Marshall gave a preliminary note on the hydrolysis of thallic sulphate.

June 19.—Sir William Turner, F.R.S., in the chair.—A paper by Dr. Thomas Muir, on the eliminant of a set of general ternary quadrics, was taken as read.—Messrs. A. C. Seward, F.R.S., and A. W. Hill presented a paper on the structure and affinities of a Lepidodendron stem from the Calciferous Sandstone of Dalmeny. The fossil stem described in this paper was found by Mr. J. Kerr, of Edinburgh, and generously handed over by Mr. Robert Kidston, of Stirling, to Mr. Seward for examination and description. The peripheral portion of the stem is occupied by a band of secondary cortical tissue (phelloderm) about 5-7 cm. in breadth; the more internal cortex has not been preserved, but the central cylinder is unusually perfect. The specimen measures 33 cm. in diameter. A fairly broad pith occupies the centre of the stem, and this is enclosed by a ring of primary xylem succeeded by a broad band of secondary xylem. The leaf traces exhibit a well-marked secondary growth; each consists of a few primary tracheids, accompanied by a fan-shaped group of short and thin-walled tracheal elements. The stem appears to be identical with *Lepidophloios Wunschtanus* from Arran, and a comparison is also instituted with *Lepidophloios Harcourtii*, a species characterised by the absence or late development of secondary wood.—Dr. T. H. Bryce read a paper on duplicitas anterior in an early chick embryo. This very rare condition in birds was examined in careful detail, and the structure of the duplex embryo was demonstrated by microphotographs of typical section.—In a paper on the trap-dykes of the Orkneys, Mr. J. S. Flett gave a description of a series of trap-dykes running mostly in an east-north-east direction, and cutting the Old Red Sandstone of Orkney. They are principally camptonites, but include also bostonites, monchiquites, fourchites, alnoites, and mellilite monchiquites. They are remarkably fresh, and show an interesting series of gradations between the different types. They are probably of Tertiary age, and have all proceeded from one focus. The presence of a single diabase dyke points to their origin from a gabbro magma.—Miss E. Chick presented a paper on the vascular system of the hypocotyl and embryo of *Ricinus communis*, which contained a detailed study of the behaviour of the vascular system in its passage from the root to the stem. Certain anomalies which have been observed were explained, and the inquiry brought out very clearly the individuality of the bundles as compared with the whole central cylinder of the root to which they belong.—Dr. W. Peddie, in a note on Mr. J. O. Thompson's paper on torsional oscillations (see NATURE, May 25, p. 86), pointed out that Mr. Thompson's suggested explanation of the results described by Lord Kelvin is very improbable, for there is no apparent reason why too large an initial oscillation should be given always to the fatigued wire and not to the unfatigued wire. Experiments on an iron wire, already described by Dr. Peddie, showed distinct fatigue of elasticity. It was also pointed out that Mr. Thompson's own results seem themselves to indicate fatigue.

PARIS.

Academy of Sciences, June 26.—M. Van Tieghem in the chair.—Note accompanying the presentation of the fourth part of the photographic atlas of the moon, by MM. Loewy and Puiseux. The salient characters of the regions represented are described.—Preparation of fluorine, by electrolysis, in an apparatus of copper, by M. Henri Moissan. The costly platinum apparatus hitherto employed in the preparation of fluorine may, it is found, be replaced by one of copper, which is less attacked than most other metals. It is probable that the copper becomes coated with a thin layer of copper fluoride which, being insoluble in hydrofluoric acid, prevents further action taking place.—Action of some gases on caoutchouc, by M. D'Arsonval. At pressures varying from 1 to 5 atmospheres caoutchouc absorbs large quantities of carbonic anhydride and, at the same time, increases considerably in volume and becomes more gelatinous and less elastic. On exposure to air the gas is gradually lost, and the substance resumes its original properties. In virtue of this property, vessels of caoutchouc readily allow car-

bonic anhydride to pass through their walls. The action is much slower in the case of oxygen and is very slight with nitrogen.—The report of the commission recommending the revision of the map of France was adopted.—Observations on the work of MM. S. Lie and A. Meyer. A mathematical paper.—A new formula relating to quadratic residues, by M. P. Pépin. A paper dealing with the theory of numbers.—On the equation of motion of automobiles, by M. A. Petot. A reply to the criticisms of M. Blondel on a former communication by the author.—On the temperature of maximum density of aqueous solutions of alkali chlorides, by M. L. C. De Coppet. Experiments were made with the chlorides of potassium, sodium, lithium, and rubidium. It is remarkable that the molecular lowering of the point of maximum density caused by lithium chloride is less than half that observed in the case of the other salts examined.—On an oscillation phakometer, by M. Ch. Dévé. The superior accuracy claimed for this instrument for measuring the curvature of optical surfaces, &c., depends on the use of a novel artifice for determining the exact position of an image.—On a laboratory spectroscope in which the dispersion and the scale are adjustable, by M. A. De Gramont.—On the polarisation of dielectrics, by M. Liénard. Observations on a previous note by M. Pellat on this subject.—Results of seismic observations in Greece from 1893 to 1898, by M. D. Eginitis. During the six years over which the observations extended 3187 disturbances were recorded, the average annual number being 531 and the maximum 876 (in 1893). Seismic disturbances are more frequent in the night than in the day, and, as regards their annual distribution, exhibit a maximum in spring and a minimum in autumn.—On the constitution of the oxides of rare metals, by MM. G. Wyruboff and A. Verneuil. Considerations relative to the formation of various complex salts of cerium and thorium lead to the suggestion that the oxides of these metals have the formulæ $(CeO)_3$ and $(ThO)_4$ respectively, in which one of the CeO or ThO groups differs in function from the rest.—The action of ferric chloride and bromide on some aromatic hydrocarbons and on their halogen substitution derivatives, by M. V. Thomas. A continuation of previous work on the subject. From the product of the action of ferric chloride on paradibromobenzene the author has succeeded in isolating two new bromotrichlorobenzenes which melt at 93° and 138° respectively.—The preparation of phenylic chlorocarbonates, by MM. Et. Barral and Albert Morel. The action of a solution of carbonyl chloride in toluene on an aqueous solution of the sodium compound of phenols is shown to afford a ready means of preparing a number of aromatic chlorocarbonates. The temperature at which the reaction takes place should not exceed $40-50^\circ$, otherwise decomposition ensues, and the symmetrical phenylic carbonate is produced.—On cerine and friedeline, by MM. C. Istrati and A. Ostrogovich. By fractional dissolution in, and crystallisation from, chloroform, the substance formerly described by one of the authors as extracted from cork has been separated into two distinct compounds, cerine, $C_{27}H_{44}O_2$, and friedeline, $C_{43}H_{70}O_2$.—On some new reactions of indolic bases and albuminoid compounds, by M. Julius Gnezda. When indol and its derivatives are heated with excess of oxalic acid, a fine purple coloration is developed, and a similar reaction is given by albumen, peptones, and gelatin. Some other dibasic acids may be used instead of oxalic acid. Other colour reactions brought about by hydrofluoric acid and hydrofluosilicic acid are also described.—Preliminary tests for the presence of rare metals in mineral waters, by M. F. Garrigou. In the author's opinion, the presence of rare metals of the copper and tin groups in mineral waters is more frequent than is generally supposed.—On the formation of pearls in *Meleagrina margaritifera*, by M. Léon Dignet. Genuine pearls are not simple deposits of nacreous material accidentally produced by glandular secretions, but are the result of a definite physiological action having for its aim the elimination of parasites or other causes of irritation.—On the embryology of *Protula neilhaci*, by M. Albert Soulier.—Regeneration of members in *Montides* and the constant production of a tetramerous tarsus in members regenerated after autotomy in pentamerous *Orthoptera*, by M. Edmond Bordage.—On the histology of the digestive tube in the larva of *Chironomus plumosus*, by M. P. Vignon.—Contribution to the study of *Actinidia* (*Dilleniaceae*), by M. Florentin Dunac.—On the experimental production of fascicular stems and inflorescences, by M. L. Généau de Lamarlière.—Velocity of propagation of nervous oscillations produced by unipolar excitation, by M.

Auguste Charpentier.—General and local anæsthesia of motor nerves, by Miles. I. Ioteyko and M. Stefanowska.—Physiological significance of alcohol in the vegetable kingdom, by M. P. Mazé.—On the action of currents of high frequency in arthritis, by M. Apostoli.—On the influence of electrolytic action in the production of radiographic erythema, by MM. H. Bordier and Salvador.—Further demonstrations of the variations in the amount of iron present in the tissues under the influence of pregnancy, by M. A. Charrin.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical series), part i. for 1899, contains the following memoirs communicated to the Society:—

January 14.—W. Voigt: On the inflexion of plane non-homogeneous waves at the straight edge of an infinite absolutely black screen.—E. Riecke: On the work expended in producing large sparks with a Töpler induction-machine.—H. Liebmann: A new property of the sphere.—O. Mügge: On new structural faces in the crystals of unalloyed metals.

February 11.—H. Minkowski: A criterion for algebraic numbers.

February 25.—C. Runge: On the solution of certain equations with integral coefficients.—R. von Zeynek: On the irritability of sensory nerve-endings by variable currents.—W. Nernst: On the theory of electrical stimulation.—F. Nachtkal: On the proportionality between piezoelectric phenomena and the stresses that produce them.

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