

THE organisers of the North of England Education Conference, held this year at Newcastle-upon-Tyne on January 5 and 6, had to struggle with the fact that almost all persons and bodies who were desirous of conferring together had their hands full with the difficulties of primary education and its immediate continuations. The conference was well attended by between two and three hundred members drawn chiefly from the education committees of the county councils, the permanent officials of such committees, and schoolmasters and mistresses, and their interest was almost entirely directed to the problems called into existence by the duties now thrown upon the education committees. Not a word was said as to higher education, very little as to secondary education in any form, and, it may be added, scarcely a word as to the religious difficulty. The tone of the conference was distinctly optimistic, and it was the general opinion that if the councils were less encumbered by intervention of the Board of Education, and deputed more of their own work to persons in each locality, the difficulties that have declared themselves would work themselves out. It was encouraging to see so much determination to cope with the questions, in spite of the heavy tax of time thrown upon the education committees, and it is very clear from the local patriotism exhibited that the councils will not ultimately rest content with perfecting a primary system. It is, however, a question of pounds, shillings, and pence, and so long as the councils are left without other resources than the rates it is clear that improvements must wait a long time.

THE December, 1905, issue of the *Bulletin of the Massachusetts Institute of Technology* comprises, as usual, a list of the staff and students of the institute, with a statement of the requirements for admission, a full description of the courses of instruction, and an account of the Lowell School for Industrial Foremen. It is interesting to note that the institute offers summer instruction during the months of June and July, supplementing the work of the regular school year. Summer courses are undertaken primarily for the benefit, first, of those who wish to distribute their work over a larger portion of the year, or to gain more time for advanced work; and, secondly, of those who, through illness or other causes, have deficiencies to make up. Moreover, to bring students into closer relations with the practical side of their professions, professional summer schools are held in the departments of civil engineering, mining engineering and metallurgy, architecture, chemistry, and geology. The students, accompanied by instructors, give their time to field-work, or visit and report on mines and industrial establishments. The Lowell School for Industrial Foremen is a free evening school which includes, at present, mechanical and electrical courses extending over two years. These courses are intended to bring the systematic study of applied science within the reach of young men who are following industrial pursuits and desire to fit themselves for higher positions, but are unable to attend courses during the day. This number of the *Bulletin*, with its 408 pages, provides abundant evidence of the excellent work being accomplished by this widely known institute.

THE annual meeting of the Geographical Association was held on January 5, when the report for 1905 was adopted. The report shows that the total membership of the association is 503, including teachers of every grade, school inspectors, and others interested in geographical education. An important advance was made during the year by the formation of local branches. This is a valuable expansion of the work of the association, enabling members to meet at more frequent intervals, to discuss the advantages presented by their own district for teaching geography, permitting combination in excursions and cooperation in the accumulation of lantern-slides and other materials necessary for good teaching. The geographical exhibits collected by the association in 1904 were on view during the year at Liverpool, Huddersfield, Bedford, and Oxford. Part of the exhibits were lent to Felsted School for a local exhibition. The exhibition is now being broken up, and exhibits lent to the association returned. Dr. G. R. Parkin, secretary of the Rhodes Scholarship Trust, who was in the chair, dealt in his address with

the general question of geography. In war, he said, geography is of the greatest importance. If our commanders at the battle of Colenso had possessed an elementary knowledge of the geography of the country thousands of precious lives might have been saved. In a nation like ours, which may any day find it necessary to send an expedition to a frontier place in India or to some corner of Africa, the intimate study of geography is an essential condition of national safety and honour. In commerce, too, geography is everything. Only last year the great cotton districts of Lancashire began to realise that the supplies of cotton were not sufficient for the demand, and Sir Alfred Jones organised a company to discover what places under the British flag are suitable for raising cotton. This is largely a geographical work which a great commercial country like ours should be carrying on as a Government measure. As the great workshop of the world, which almost requires the world from which to draw raw material and food, no nation ought to know so much about geography as ourselves, and yet up to the last eight or ten years hardly a subject has been shown so little consideration.

SOCIETIES AND ACADEMIES.

LONDON.

**Zoological Society, December 12, 1905.**—Mr. Howard Saunders, vice-president, in the chair.—*Exhibitions.*—Twelve enlarged photographs of whales taken at the fin-whaling factories in east Finmarken in 1883–89: A. H. **Cocks**. The species represented were *Megaptera longimana*, *Balaenoptera sibbaldii*, *B. musculus*, and *B. borealis*.—The tail-vertebræ of a dormouse of the genus *Eliomys*, which showed the phenomenon, hitherto unrecorded among Mammalia, of the regeneration of a bony structure in case of accident: Oldfield **Thomas**. The caudal vertebra, in this case the twelfth, which had been originally broken across, had grown out into a slender styliiform appendix 15 mm. in length and rather less than 1 mm. in diameter, the normal vertebræ of this part of the tail measuring about 6×2 mm. On further search two other specimens exhibiting the same structure had been found, and it appeared, therefore, that dormice, like lizards, were able partly to regenerate their tails, when these important balancing-organs got accidentally broken.—Microscopic sections of the skeletal tube found in the restored tail of one of the dormice (*Graphiurus*) exhibited by Mr. Thomas: Dr. W. G. **Ridewood**. The wall was made up of close-set lamellæ, producing in a transverse section a fine concentric striation. Lacunæ with numerous branching canaliculi were disposed regularly in relation with the concentric striations, and the general effect was that presented by a transverse section of the humerus or femur of a frog. Internally to the bony layers, and contiguous with the central jelly, was a moderately thick layer, which was clear, homogeneous, and highly refractive. Dr. Ridewood also exhibited, by way of contrast, slides of the skeleton of the restored tail of an iguana lizard, the skeletal tube in this case being composed of calcified fibro-cartilage and not of bone.—*Papers.*—Observations and experiments on the habits and reactions of crabs bearing sea-anemones in their claws: Prof. J. E. **Duerden**.—Notes on a large collection of snakes made by Mr. Alan Owston in Japan and the Loo Choo Islands: Captain F. **Wall**.—A collection of South Australian spiders of the family Lycosidæ contained in the museum at Adelaide: H. R. **Hogg**. Thirteen species were remarked upon, ten of which were described as new.—A collection of mammals obtained by Colonel A. C. Bailward during a shooting trip through Persia and Armenia during the past summer, and presented to the National Museum: Oldfield **Thomas**. Thirty-one species were enumerated, and special attention was directed to the discovery of *Calomyscus*, a primitive murine, the only ally of which, amongst recent forms, was the North American *Peromyscus*.—The colour-variation of the beetle *Gonioctena variabilis*: L. **Doncaster**. The material on which the paper was based was collected almost entirely at Granada, and the author found that, although the insect was extraordinarily variable, when a large collection was examined the beetles could be classified into two chief

groups with but few intermediate forms.—Two new species of worms, one a *Pontodrilus* from the shores of the Red Sea, and the other an *Enchytræid* of the genus *Henlea* from India, which was destructive to the eggs of the locust: F. E. **Beddard**.—Two species of decapod Crustacea, a crab and a prawn, collected by Dr. R. Hanitsch, of Singapore, from a small artificial fresh-water pool on Christmas Island: Dr. J. G. **de Man**. The interest of their occurrence lies in the fact that previous to the construction of the reservoir, a few years ago, there seems to have been no possible habitat for these animals on the island, and they must have been introduced since that time, perhaps by migration from the sea. The crab was referred to *Ptychognathus pusillus*, a species described by Heller from the Nicobar Islands forty years ago, and not since found. The prawn was made the type of a new variety of *Palaemon lar*, both the variety and the typical form having a wide distribution in countries bordering the Indian Ocean.—Results of experiments made in connection with the heredity of webbed feet in pigeons: R. **Staples-Browne**.—New and rare British Oribatidæ: C. **Warburton** and N. D. F. **Pearce**. Eleven species were remarked upon, of which seven were described as new to science, and two were recorded for the first time as being British. The nymph of *Serrarius microcephalus* was described for the first time, and it was pointed out that *Gustavia sol* of Kramer was a nymph of an unknown species of *Serrarius*.

**Royal Meteorological Society, December 20, 1905.**—Mr. R. Bentley, president, in the chair.—Attempt to fly kites for meteorological purposes from the mission ship attached to a deep-sea fishing fleet in the North Sea: G. C. **Simpson**. These observations, which were made in July and August last, were carried out on behalf of the joint kite committee of the Royal Meteorological Society and of the British Association. By the kindness of the Royal National Mission to Deep-sea Fishermen, the kites were flown from the deck of the mission ship *Queen Alexandra* attached to the Red Cross Fleet. Owing to the vessel being almost continuously employed in trawling, the opportunities for flying kites were very limited; nevertheless, Mr. Simpson was able to secure eight ascents during the time he was on board the vessel, and he now gave the results obtained. The greatest height reached was 5800 feet.—Method of flying kites in Barbados in April and May last year: C. J. P. **Cave**. Mr. W. H. Dines, who had examined the records, said that the humidity traces show generally a value of about 60 per cent. at the surface, rising to 80–90 per cent. at heights from 1000 feet to 2000 feet, and then falling off again in some cases to 50 per cent. or less as the height increases. These values are lower than might have been expected over a tropical ocean. The increase is of the ordinary kind, but the maximum value occurs at a far lower elevation than is the case in Europe. It is probable that the relative humidity forms an extremely accurate index to the vertical circulation, a low humidity indicating a descending current of air, and so it may be inferred that there is some settling down of the atmosphere over the region of the smaller west Indian islands in April and May.—Temperature observations during the partial solar eclipse, August 30, 1905: W. H. **Dines**.—Comparison between Glaisher's factors and Ferrel's psychrometric formula: J. R. **Sutton**.—A rapid method of finding the elastic force of aqueous vapour, &c., from dry and wet bulb thermometer readings: J. **Ball**.

**Chemical Society, December 21, 1905.**—Prof. R. Meldola, F.R.S., president, in the chair.—Azo-derivatives from methyl- $\alpha$ -naphthocoumarin: J. T. **Hewitt** and H. V. **Mitchell**. Several of these derivatives are described; the most interesting is *p*-nitrobenzeneazomethylnaphthocoumarin, which gives an intense blue coloration in alkaline solution.—The preparation and reactions of benzoyl nitrate: F. E. **Francis**. Benzoyl nitrate is formed by the interaction of benzoyl chloride with silver nitrate at low temperatures. It is a light yellow oil which, if carefully warmed, decomposes into benzoic anhydride and oxides of nitrogen, but if heated quickly explodes.—The supposed identity of dihydrolauroleone and dihydroisolauroleone with 1:1-dimethylhexahydrobenzene: A. W. **Crossley** and

N. **Renouf**. Zelinsky and Lepeschkin supposed that these three substances were identical, but this is not the case.—The diazo-derivatives of 1:5- and 1:8-benzenesulphonylnaphthalenediamines: G. T. **Morgan** and F. M. G. **Micklethwait**.—Further experiments on a new method of determining molecular weights: P. **Blackman**.—Studies in fermentation. The chemical dynamics of alcoholic fermentation by yeast: A. **Siator**. The results indicate that the reaction, measured by observing the change in pressure due to evolution of carbon dioxide, is the slow decomposition of a compound produced by the interaction of the enzyme and the sugar.—Some new platinumocyanides: L. A. **Levy** and H. A. **Sisson**. Hydrazine and hydroxylamine platinumocyanides are described.—An intramolecular change leading to the formation of naphthalene derivatives: E. F. J. **Atkinson** and J. F. **Thorpe**. Ethyl sodiocyanacetate condenses with benzyl cyanide to form ethyl  $\alpha$ -cyano- $\beta$ -imino- $\gamma$ -phenyl-*n*-butyrate. This, when treated with an equal weight of sulphuric acid, forms an intense green solution, which yields ethyl 1:3-diaminonaphthalene-2-carboxylate.—The relation of position isomerism to optical activity, V., The rotation of the menthyl esters of the isomeric dibromobenzoic acids: J. B. **Cohen** and I. H. **Zortman**. An account of certain physical constants, including the molecular rotations of the six isomeric menthyl dibromobenzoates.—Some derivatives of naphtho-ylbenzoic acid and of naphthacenequinone: J. Q. **Orchardson** and C. **Weizmann**.—Ethyl  $\beta$ -naphtho-ylacetate: C. **Weizmann** and E. B. **Falkner**.—Contributions to the chemistry of the amidines. 2-Aminothiazoles and 2-imino-2:3-dihydrothiazoles. 2-Iminotriazoles and 2-amino-4:5-dihydrothiazoles: G. **Young** and S. I. **Crookes**.—The action of water on diazo-salts: J. C. **Cain** and G. M. **Norman**. An extension of a method of investigation, already described, to diazo-salts from 2:4-dibromoaniline and dibromo-*p*-toluidine (*cp. Proc. Chem. Soc.*, 1905, xxi., 206).—Note on the atomic weight of nitrogen: A. **Scott**. A reply to Richards (*Proc. Amer. Phil. Soc.*, 1904, xliii., 116) showing *inter alia* that the recent work of Richards and Wells on the atomic weights of chlorine and bromine has cleared up the discrepancy between the numbers obtained by the author for the atomic weight of nitrogen (*cp. Journ. Chem. Soc.*, 1901, lxxix., 154).—The solubility of zinc hydroxide in alkalis: J. **Moir**. When zinc hydroxide dissolves in excess of caustic alkali, the phenomenon is essentially the production of an equilibrium between the alkali and the zinc acid, and no definite chemical compounds such as  $ZnO \cdot 8KOH$  are formed.—The slow combustion of carbon disulphide: N. **Smith**. The reddish-brown deposit formed when carbon disulphide and oxygen are passed through a heated tube consists chiefly of an acidic compound  $C_{16}H_6O_4S_8$ . The silver and ammonium salts have been prepared.

## PARIS.

**Academy of Sciences, December 26, 1905.**—M. Troost in the chair.—Researches on the insoluble potassium compounds contained in humic materials: M. **Berthelot**. Powdered wood charcoal, after careful extraction with dilute hydrochloric acid and water, was treated with dilute solutions of potassium acetate and calcium acetate, the constituents of the charcoal ash being determined before and after the treatment. The results are compared with those obtained previously in which the charcoal was washed with water only, and conclusions drawn as to the nature of the potassium salts existing in wood charcoal.—On a standard of light: J. **Violle**. A description of some attempts to establish a standard of light by utilising the constant temperature obtained by boiling silver and copper.—On a new petrographic type of certain leucophrites from Somma: A. **Lacroix**.—New observations on the formation and the quantitative variations of the hydrocyanic principle of the black elder: L. **Guignard**. The amount of the glucoside falls off very slightly with the increase of age of the leaf. At the end of the vegetative period it does not pass into the stem, but remains in the leaf when it falls off, and hence cannot be regarded as a reserve substance.—The influence of some factors on experimental parthenogenesis: Yves **Delage**. Numerous chemical reagents can bring about experimental parthenogenesis, and the conditions may also be varied, but the



fundamental action or condition still remains to be determined. The variable results obtained with the same reagent under, apparently, the same experimental conditions are pointed out, showing the necessity of averaging a large number of experiments before drawing conclusions. The reagent which has given the best results is made up of sea-water, 3 c.c., solution of NaCl of  $2\frac{1}{2}$  molecules per litre, 45 c.c., distilled water, 72 c.c., sulphite of soda, 5 drops.—On the identity of *surra* and *mbori*: A. **Laveran**. It has already been shown that morphologically the trypanosomes of *surra* and *mbori* were nearly identical, and also that animals which had been rendered immune to *surra* were practically immune to *mbori*. In the present paper it is shown that an animal which has acquired immunity for *mbori* is also immune for *surra*, and hence the conclusion is drawn that the trypanosomes in these two diseases belong to the same species. The trypanosome of *mbori* is a less virulent variety of *Trypan. evansi*.—Observations on the sun made at the Observatory of Lyons with the 16 cm. Brunner equatorial during the first quarter of 1905: J. **Guillaume**. The results are summarised in three tables showing the number of spots, the distribution of the spots in latitude, and the distribution of the faculæ in latitude.—On isothermal surfaces and a class of envelopes of spheres: A. **Demoulin**.—On some generalisations of Picard's theorem: C. **Carathéodory**.—On the non-stationary movement of a fluid ellipsoid of revolution which does not change in figure during the movement: W. **Stekloff**.—On a transformation of certain linear partial differential equations of the second order: J. **Clairin**.—Reclamation of priority regarding an apparatus of M. Nodon for examining the solar protuberances at any time: Antoine **Sauve**.—On the propagation of light in a system in translation and on the aberration of the stars: G. **Sagnac**.—On the mechanism of the production and the nature of cathodic pulverisations: Ch. **Maurain**. The cathodic pulverisations appear to consist of moderately large particles, torn from the kathode by the shock of the  $\alpha$  rays, and charged electrically, but with an  $e/m$  much smaller than for the projectiles constituting the kathode rays.—On the mobilities of the ions of saline vapours: G. **Moreau**.—On the respective spectra of the different phases of the electric spark: G. A. **Hemsalech**. Using the arrangement of apparatus described in an earlier note, the author finds that the electric discharge gives a line spectrum in non-ionised air and a band spectrum in ionised air. It is shown that a single oscillation is capable of producing and rendering luminous the metallic vapour.—The sulphates of samarium: Camille **Matignon**. The methods of obtaining the acid and basic sulphate from the neutral sulphate are given, together with the properties of these salts.—The action of acetylene on iodine pentoxide: Georges F. **Jaubert**. Acetylene is quantitatively oxidised to carbon dioxide by iodine pentoxide at 80° C. In the estimation of carbon monoxide in the air by the iodine pentoxide method, it is therefore necessary to ensure the absence of acetylene by appropriate reagents.—The action of glucose on selenious acid: MM. **Echsner de Coninck** and **Chauvenet**. In the reduction of selenious acid by glucose, a red amorphous colloidal variety of selenium is produced, insoluble in carbon bisulphide. At 100° C. it is partially converted into black selenium.—The action of ammonia gas on the tribromide and triiodide of phosphorus: C. **Hugot**. A yellow amide of phosphorus is formed by this reaction at low temperatures; at higher temperatures it is decomposed, phosphorus imide being formed.—On the methods employed by the Arabs to get metallic lustre on enamels: L. **Franchet**.—On a new mode of preparation of barium: M. **Guntz**. The purest metal obtained in previous work contained 98.5 per cent. of barium. If this is converted into the hydride, and the latter heated *in vacuo* at 1200° C., the sublimed metal is crystallised and of 99.5 per cent. purity.—On some new derivatives of pentabasic phosphoric acid,  $P(OH)_5$ : P. **Lemoult**.—Syntheses of derivatives of 1:4:7 symmetrical heptanetriol: J. L. **Hamonet**.—Products of the hydrogenation of carvacrol: Léon **Brunel**. An account of the results obtained by the application of the Sabatier and Senderens method to carvacrol.—Some liquefying and hydrolysing actions of starch: P. **Petit**.—On the presence of trachytes and hypersthene andesites in the Carboniferous

strata of Corsica: M. **Deprat**.—On *Raphia Ruffia*, a wax-producing palm: Henri **Jumelle**.—On an important variation of the tuber of *Solanum Maglia*: Édouard **Heckel**. Experimental work tending to confirm the view of de Candolle that this is the wild species from which the cultivated potato is derived.—On the use of manganese as a manure: Gabriel **Bertrand**. An account of some experiments, made on the agricultural scale, showing the beneficial effect of the addition of manganese sulphate as a manure.—The assimilation of carbon dioxide by the chrysalids of Lepidoptera: Mlle. Maria **von Linden**.—On the parallelism between phototropism and artificial parthenogenesis: Georges **Bohn**.—On the independence of metamorphosis and the nervous system in batrachians: P. **Wintrobort**.—On the inoculation of cancer: M. **Mayet**. The soluble products obtained from a cancerous tumour in man, free from solid matter by filtration through porcelain, and injected into a dog, gave rise to a cancerous growth.—The pathological nature of the Holmgren canals of nerve cells: R. **Legendre**. The author's views are in direct opposition to those of Holmgren concerning the function of the cavities in nerve cells, and he regards them as pathological in nature.—On the discovery of Amphibia in the Coal-measures of Commeny: Armand **Thevenin**.—Magnetic observations at the Observatory of Ebre on the occasion of the eclipse of the sun of August 30, 1905: P. **Cirera**.

January 2.—M. H. Poincaré in the chair.—On the estimation of carbon monoxide in air by iodic anhydride: Armand **Gautier**. With reference to the note by M. G. Jaubert in the last number of the *Comptes rendus*, the author points out that he published this fact in 1898, and has also shown how to correct for the error introduced into the determination by the presence of acetylene. Acetylene does not occur in the air of towns.—New observations on the Pycnogonides collected in the Antarctic regions in the course of the expedition directed by M. Jean Charcot: E. L. **Bouvier**.—On the deformation of quadrics: C. **Guichard**.—On the mutations of some fossil plants of the Coal-measures: M. **Grand'Eury**. A résumé of the results obtained by the author during the last ten years.—Observations of Giacobini's comet (1905c) made at the Observatory of Toulouse with the 38 cm. Brunner-Henry equatorial: F. **Rossard**. Observations made on December 18 and 22, 1905, showing the positions of the comparison stars and apparent positions of the comet.—Provisional elements of Giacobini's comet (1905, December 6): E. **Maubant**.—Observation of Giacobini's comet (1905c) made with the 16 cm. Brunner equatorial at the Observatory of Lyons: J. **Guillaume**. Observations made on December 12, 1905. The comet appeared as a diffuse luminosity of 30" to 40" diameter.—Photographic study of the annular nebula in Cygnus, N.G.C. 6894: Gabriel **Tikhoff**. The details shown by the photograph are in general agreement with those published by Keeler, from the Lick Observatory.—Theorem on entire functions: M. **Auric**.—A contribution to the study of photographic screens: J. **Renoux**. Remarks on the use of colouring matters for photographic screens.—Researches on the terrestrial field, carried out during the total eclipse of August 30, 1905: Charles **Nordmann**.—On the determination of the rare gases in natural gaseous mixtures: Charles **Moureu**. A diagram of the scheme of apparatus used by the author is given, together with exact details of working. Oxygen and nitrogen are removed by hot lime and magnesium mixture, hydrogen and hydrocarbons by heated copper oxide, moisture and carbon dioxide by phosphoric anhydride and soda lime respectively. The last traces of nitrogen are removed by metallic calcium.—On the heat of fusion of ice: A. **Leduc** (see p. 254).—On the synthesis of the amido-acids derived from the albumens: L. **Hugouenq** and A. **Morel**.—The structure of plants developed in the light, without carbon dioxide, and in presence of organic materials: M. **Molliard**. The essential characters of plants cultivated under the above conditions are a structure resembling that of the subterranean organs and the formation of tissue with plurinucleated cells.—Symbiosis of orchids and several endophytic fungi: Noël **Bernard**.—On the copepods collected by the Charcot expedition and communicated by M. E. L. Bouvier: M. **Quidor**.—On a new micro-

sporidium, *Pleistophora macrospora*: Casimir Cépède.—On the intimate structure of the protoplasm in the Protozoa: Emmanuel Fauré-Fremiet.—A respiratory apparatus for the exploration of places filled with irrespirable gases: M. Guglielminetti. The apparatus consists of three parts, the bottle of compressed oxygen, the regenerator and cooler, and the respiratory mask. Illustrations are given showing a diagrammatic arrangement of the whole apparatus, and its position in actual use. Its weight is 13 kilograms.—Observations made on Mt. Blanc on the effect of altitude on the blood: H. Guillemand and R. Moog.

## DIARY OF SOCIETIES.

### THURSDAY, JANUARY 11.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Charing Cross Company's City of London Works: W. H. Patchell (*Conclusion of Discussion*).

LONDON MATHEMATICAL SOCIETY, at 5.30.—On the Diffraction of Sound by Large Cylinders: J. W. Nicholson.—On the Monogeneity of an Algebraic Function: Dr. H. F. Baker.—On the Expression of the so-called Biquaternions and Triquaternions with the aid of Quaternary Matrices: J. Brill.

### FRIDAY, JANUARY 12.

ROYAL ASTRONOMICAL SOCIETY, at 5.—The Annular Nebula in Lyra: E. E. Barnard.—(1) Star Reductions: (2) The Work of a Colonial Observatory: W. E. Cooke.—(1) Elements and Light Curve of RV Lyra; (2) Elements and Light Curve of VW Cygni: A. Stanley Williams.—The Value of the Constant of Refraction: L. de Ball.—Observations of Comet  $\delta$  1905 from Photographs taken with the 30-inch Reflector of the Thompson Equatorial: Royal Observatory, Greenwich.—On a New Method of Determining the Absolute Dimensions of an Algol Variable: A. W. Roberts.—Report on Observations of Jupiter, 1904-5, made at Trincomali, Ceylon: Major P. B. Molesworth.—Mean Areas and Heliographic Latitudes of Sun-spots in the year 1904, deduced from Photographs taken at Greenwich, at Dehra Dûn, at Kodaikânal Observatory (India), and in Mauritius: Royal Observatory, Greenwich.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Lecture on the Theory of Machines: Prof. J. D. Cormack.

MALACOLOGICAL SOCIETY, at 8.—Note of the Dates of Publication of C. L. F. von Sandberger's "Die Land- und Süßwasser-conchylien der Vorwelt," 1870-75: B. B. Woodward.—New Species of Siphonaria, Terebra, and Maugilia, and a Remarkable Form of *Cypraea cruenta*, from South Africa: G. B. Sowerby.—Remarks on some Forms of Chloritis with Description of a New Species: G. K. Gude.—Notes on the Anatomy of S. African Aplysiidae with Descriptions of two New Species: R. H. Burne.—Notes on *Volva kenyoniensis*, *V. papillosa*, var. *costata*, *V. roadnighti*, Juv., *Cypraea tigris*, var. *lineata*, and *Conus waterhouseae*, var. *mauritanica*: Mrs. Kenyon.—Description of a New Species of Crepidula from Victoria: Mrs. Kenyon.

### MONDAY, JANUARY 15.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—British East African Plateau Land and its Economic Conditions: Major A. St. Hill Gibbons.

VICTORIA INSTITUTE, at 4.30.—Evolutionary Law in the Creation Story of Genesis: Rev. A. Irving.

### TUESDAY, JANUARY 16.

ROYAL INSTITUTION, at 5.—Impressions of Travel in China and the Far East: Prof. E. H. Parker.

INSTITUTION OF CIVIL ENGINEERS, at 8.—*Continued Discussion*: The Elimination of Storm-water from Sewerage Systems: D. E. Lloyd-Davies.—On the Elimination of Suspended Solids and Colloidal Matters from Sewage: Lieut.-Colonel A. S. Jones and Dr. W. O. Travis.

ZOOLOGICAL SOCIETY, at 8.30.—On Bones of the Lynx from Cales Dale, Derbyshire: W. Storrs Fox.—On Mammals from South Johore and Singapore collected by Mr. C. B. Kloss: J. Lewis Bonhote.—Contributions to the Anatomy of the Ophidia: F. E. Beddard, F.R.S.—On the Minute Structure of the Teeth of Creodonts, with Especial Reference to their suggested Resemblance to Marsupials: Charles S. Tomes, F.R.S.

### WEDNESDAY, JANUARY 17.

SOCIETY OF ARTS, at 8.—The Scientific Aspects of Voice Development: Dr. W. A. Aikin.

ENTOMOLOGICAL SOCIETY, at 8.—Annual Meeting.

ROYAL MICROSCOPICAL SOCIETY, at 8.—President's Annual Address: The Life and Work of Bernard Renault.

ROYAL METEOROLOGICAL SOCIETY, at 7.45.—Meteorology in Daily Life: Richard Bentley.

### THURSDAY, JANUARY 18.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: The Factors which Determine the Production of Intraocular Fluid: E. E. Henderson and Prof. E. H. Starling, F.R.S.—A Critical Account of some Anomalous Conditions of the Cerebrum in the Human Fetus: Dr. W. L. H. Duckworth.—A Case of Regeneration in Polychæte Worms: Arnold I. Watson.—On the Infection, Histology, and Development of the Uredo Stage in certain Uredineæ: I. B. P. Evans.—On the Synapsis in Amphibia: J. E. S. Moore and Miss Embleton.—On the Constancy of Form among the Synaptic Gemini (Heterotype Chromosomes) in certain Animals: J. E. S. Moore and G. Arnold.—The Growth of the Oocyte in Antedon: a Morphological Study in the Cell Metabolism: Gilbert C. Chubb.

CHEMICAL SOCIETY, at 8.30.—The Refractive Indices of Crystallising Solutions with Especial Reference to the Passage from the Meta-stable to the Labile Condition: H. A. Miers and F. Isaac.—The Determination

of Available Plant Food in Soils by the Use of Weak Acid Solvents. Part II.: A. D. Hall and A. Amos.—The Action of Ammonia and Amines on Diazobenzene Picrate: O. Silberrad and G. Rotter.—The Preparation of  $\beta$ -Bis-triazobenzene: O. Silberrad and B. J. Smart.—Gradual Decomposition of Ethyl Diazoacetate: O. Silberrad and C. S. Roy.—Studies on Nitrogen Iodide. Part III. The Action of Methyl and Benzyl Iodides: O. Silberrad and B. J. Smart.—Silicon Researches. Part X. Silicon Thiocyanate: J. E. Reynolds.—The Relations between Absorption Spectra and Chemical Constitution. Part I. The Chemical Reactivity of the Carbonyl Group: A. W. Stewart and E. C. C. Baly.—Halogen Derivatives of Substituted Oxamides: F. D. Chattaway and W. H. Lewis.—The Effect of Constitution on the Rotatory Power of Optically Active Nitrogen Compounds. Part I.: Miss M. B. Thomas and H. O. Jones.—Menthyl Benzene Sulphonate and Menthyl- $\beta$ -Naphthalene Sulphonate: T. S. Patterson and J. Frew.—An Apparatus for the Continuous Extraction of Liquids with Ether: R. S. Bowman.—Action of Bromine on Benzene- $o$ -Nitrophenol: J. T. Hewitt and N. Walker.—Some Reactions and New Compounds of Fluorine. Part I.: E. B. R. Prideaux.—The Relation between Absorption Spectra and Chemical Reactivity. Part II. The Quinones and  $\alpha$ -Diketones: E. C. C. Baly and A. W. Stewart.—The Relation between Absorption Spectra and Chemical Reactivity. Part III. The Nitroanilines and the Nitrophenols: E. C. C. Baly, W. H. Edwards, and A. W. Stewart.—Contributions to the Chemistry of the Rare Earths. Part I.: M. Esposito.—A Synthesis of Aldehydes by Grignard's Reaction: G. W. Monier Williams.—The Condensation of Dimethyldihydroresorcin and of Chloroacetodimethyl-tetrahydrobenzene with Primary Amines. Part I. Monamines, Ammonia, Aniline, and  $\beta$ -Toluidine: P. Haas.

SOCIETY OF ARTS, at 4.30.—The City of Calcutta: C. E. Buckland.—At 8.0.—High Speed Electric Machinery, with Special Reference to Steam-Turbine Machines: Prof. S. P. Thompson, F.R.S.

LINNEAN SOCIETY, at 8.—The Life-history of *Margaritifera Panasesae*: A. W. Allen. On some Endophytic Algae: A. D. Cotton.—Jacobson's Organ of Sphenodon: Dr. R. Broom.

### FRIDAY, JANUARY 19.

ROYAL INSTITUTION, at 9.—Some Applications of the Theory of Electric Discharge to Spectroscopy: Prof. J. J. Thomson, F.R.S.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Behaviour of Materials of Construction under Pure Shear: E. G. Izod (*Resumed Discussion*): Worm Contact: R. A. Bruce.

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