country, owing to the extraordinary defective condition of our preliminary school training. But if children in elementary schools were taught to appreciate the main principles of scientific method, it would be possible for them afterwards to properly avail themselves of the higher training which is offered to them, and which alone can render them competent as industrial and domestic workers. It is to be hoped, therefore, that the School Board will see its way to extending the work of scientific education begun under its auspices six years ago.

IN a preliminary report recently prepared for the Technical Education Board of the London County Council, Dr. C. W. Kimmins gives the following statistics to show the progress that has been made, especially in the teaching of physics and chemistry, in the secondary schools assisted by the Board.

	1893-4.	1894-5.	1895-6.
Number of pupils receiving theoretical instruction in physics	1867	1899	2266
Number of pupils doing practical work in physics	215	433	1576
Number of pupils receiving theoretical instruction in chemistry ...	2091	2287	2647
Number of pupils doing practical work in chemistry...	630	1101	1814
Percentage of those receiving theoretical instruction in physics, taking practical work in this subject	11·5	22·9	69·5
Percentage of those receiving theoretical instruction in chemistry, taking practical work in this subject	30·1	48·1	68·5

Dr. Kimmins points out that the statistics show that there has been a general advance in the number receiving instruction in experimental science at these schools, and that the proportion doing individual practical work has increased to a far greater extent. He reports that the general introduction of practical teaching in elementary physics is producing excellent results. A marked improvement is also to be noticed in the teaching of chemistry; the practical work is of a much more rational kind, and bears a closer relation to the class teaching. Qualitative analysis is rapidly ceasing to occupy the important position it has held in the laboratory in former years.

SCIENTIFIC SERIALS.

THE *Journal of Botany* commenced its enlarged issue with the present year, and the two numbers already published indicate that its editor will have no difficulty in filling its pages with matter of value to the English botanist. An interesting paper, by Mr. E. A. L. Batters, describes several new British seaweeds, including two new genera, *Colaconema* and *Trailliella*, both belonging to the *Florideæ*. Mr. J. H. Burkill contributes a paper on the variation in the number of parts of the flower of *Parnassia palustris*. Mr. A. H. Praeger proposes a division of Ireland into botanical districts, accompanying his paper by a map. There are a number of other papers on various departments of descriptive botany. The plates illustrate two new forms of British pond-weed described by Mr. A. Fryer, and new African plants described by Mr. A. B. Rendle and Mr. E. G. Baker.

Bulletin of the American Mathematical Society, vol. ii. No. 3, December 1895.—Prof. F. Morley, in a notice of Gundelfinger's Vorlesungen aus der Analytischen Geometrie des Kegelschnitte, classes it with two other recent analytic works on conic sections, for which one is very thankful; the other two are the works by the late Prof. Casey and Miss Scott. He states the plan of Gundelfinger's treatise to be to systematically develop the theory by means of homogeneous coordinates, while bringing out the fact that the elementary (x, y) system is merely a case to which we can descend when so minded. This latter may seem a minor point; pedagogically it is not so, and it is certainly not well explained in many books. The development of the theory is really analytic, though one feels that the analysis is under the control of a masterly geometric insight. Prof. Morley's review is a long one, and enters into many details of the work which has been edited by Dr. Dingeldey. Short notes follow, viz. on divergent series, by Prof. A. Chessin, and a simple proof of a fundamental theorem of substitution groups, and several applications of the theorem, by Dr. G. A. Miller.—Dr. James Pierpont contributes an interesting note on an undemonstrated theorem of the *Disquisitiones Arithmeticæ*. This ends with two theorems relating to the construction of a polygon of n sides by a series of *rational* conics, *i.e.* conics whose coefficients are rational in the current domain of rationality, and gives in three rows the polygons, constructible by rule and compass, known to the Greeks (twenty cases); then the polygons of this class discovered by Gauss (five cases); and, in the last row, the *additional* polygons which can be constructed when *rational* conics can be employed (thirty-five cases). The table is limited to constructible regular polygons of sides $\leqq 100$.—Notes and new publications close the Number.

Bollettino della Società Sismologica Italiana, vol. i. 1895, No. 7.—Ernesto von Rebeur-Paschwitz, by A. C.—The first instant of the great earthquake-shock of May 18, 1895, noted in Arcetri (Florence), by A. Abetti.—On the Florentine seismic centre, by M. Baratta. A topographical discussion of the three principal earthquakes felt in the neighbourhood of Florence in the present century, those of 1812, 1887, and 1895. The centres of the meizoseismal zones, though very near one another, are not quite coincident; but this, it is suggested, may be due to a variation in the depth of focus, or in the intensity of the original disturbance.—Notices of earthquakes felt in Italy (May–June 1895), by M. Baratta. The most important are the Florentine earthquake of May 18, the Spoleto earthquake of May 20, and the Rovigo earthquake of May 25.

SOCIETIES AND ACADEMIES.

LONDON.

Chemical Society, January 16.—Mr. A. G. Vernon Harcourt, President, in the chair.—The following papers were read:—The acetylene theory of luminosity, by V. B. Lewes. The adverse criticism of the acetylene theory of luminosity by Smithells does not affect the considerations upon which the theory is based; these are (1) that the unsaturated hydrocarbons in the inner region of the flame are largely converted into acetylene before luminosity commences; (2) that pure acetylene develops luminosity when flowing through a heated tube; (3) that the temperature necessary to decompose acetylene with evolution of light does not raise to incandescence the liberated carbon; and (4) that in luminous hydrocarbon flames of sufficiently high temperature, the luminosity varies directly with the amount of acetylene present at the point where luminosity commences.—The action of sodium alcoholate on certain aromatic amides, by J. B. Cohen and W. H. Archdeacon. Many of the aromatic amides form addition compounds with sodium meth- or eth-oxide; thus, acetanilide yields a substance of the composition PhNHAc, MeONa.—Note on the electrical conductivity of formanilide and thioformanilide, by T. Ewan.—The action of sugar on ammoniacal silver nitrate, by J. Henderson. A definite factor can be assigned expressing the action of glucose, lævulose, and galactose on ammoniacal silver nitrate under standard conditions, but no such factor can be obtained in the case of lactose or maltose, owing to secondary reactions. Cane-sugar, starch, and dextrin do not act on the ammoniacal solution under the standard conditions.—Solution and diffusion of certain metals in mercury, by W. J. Humphreys.—On some of the ethereal salts of active and inactive monobenzoyl, dibenzoyl, diphenylacetyl, and dipropionyl glyceric acids, by P. Frankland and J. MacGregor. The physical properties of these salts have been determined, and the relation between the rotatory power and the constitution of glyceric acid derivatives is discussed.—On the rotation of optically active compounds in organic solvents, by P. Frankland and R. H. Pickard. As a result of cryoscopic and rotatory power determinations of methyl dibenzoylglycerate and ethyl diacetylglycerate in various solvents, the authors find that when the substance has a low molecular weight, the specific rotation is high, and *vice versâ*; the bearings of these results are discussed.—Note on the action of hydrogen chloride on ethyl alcohol, by J. C. Cain.—Transformation of the alkylammonium cyanates into the corresponding ureas, by J. Walker and J. R. Appleyard. Measurements of the rates of transformation of the alkylammonium cyanates into ureas, and *vice versâ*, indicate that the cyanates are dissociated into two ions in aqueous solution. On certain phenylthiocarbamates, by H. L. Snape.—The available potash in soils, by T. B. Wood.

Linnean Society, January 16.—Mr. C. B. Clarke, F.R.S., President, in the chair.—Messrs. O. V. Aplin and William Cole were elected Fellows of the Society.—On behalf of Mr. G. H. Adcock, of Geelong, Victoria, Mr. A. B. Rendle exhibited and made remarks upon some photographs of *Hakea grammatophylla*, F. Muell, a little-known species of the Proteaceæ, of local distribution in South Australia.—Mr. G. F. Scott Elliot exhibited specimens of bark cloth from Uganda and the shores of Lake Tanganika, and gave an account of the mode of its preparation from the bark cloth fig, and of the fleshy Euphorbias and Acacias of British East Africa, illustrating his remarks with lantern slides from photographs taken by himself. Mr. Elliot remarked that the native cloth manufactured on the shores of the Tanganika was made on the same sort of rough loom which he had seen employed near Sierra Leone, and that as the Tanganika is ethnologically and botanically part of the west coast, it was interesting to find that the methods employed in countries so far apart were so similar in detail. A discussion followed, in which Messrs. Rendle, Holmes, T. Christy, and W. Carruthers took part.—On behalf of Mr. W. R. Ogilvie Grant, Mr. Harting exhibited some land shells and eggs and skins of two rare Petrels from the Salvage Islands, lying between the Canaries and Madeira. These islands were stated to be of volcanic origin faced with steep rocks from 100 feet to 300 feet in height, and covered with loose sandy soil, the vegetation consisting chiefly of the wild tomato *Lycopersicum esculentum*, the ice-plant *Mesembryanthemum crystallinum*, *Asparagus scoparius*, and *Cistanche lutea*. Amongst the shells collected were *Helix ustulata*, peculiar to the Salvage Islands, *H. pisana*, *H. Macandrewi*, *H. polymorpha*, *Rumina decollata*, *Littorina striata*, *Cerithium rupestre*, and *Nassa conspersa*. *Helix paupercula* was said to furnish the chief food of the Tarantula spider (*Lycosa maderiana*), and entire shells of *Helix pisana* had been found in the stomach of a Kestrel hawk shot on one of the islands. The Petrels exhibited with their eggs were *Pelagodroma marina*, and *Oceanodroma cryptoleucura*, which were found nesting in burrows after the manner of the Shearwater (*Puffinus kuhli*), of which great numbers were also breeding there. Mr. Howard Saunders offered some critical remarks on these birds, referring chiefly to what was known of their geographical distribution.—Mr. George Murray exhibited full-grown complete specimens of some giant Laminarians from the Pacific, *Nereocystis*, *Egregia*, and *Macrocystis*, and some very fine specimens of *Postelsia*, collected by Mr. W. E. Shaw on the coast of California. He made some remarks on the distribution of Californian *Laminarieæ*, and illustrated some points in the structure of their reproductive organs.—A paper was then read, by Prof. T. Rupert Jones, F.R.S., and Mr. Frederick Chapman, on the relations of the fistulose *Polymorphianæ* and the *Ramulinæ*, with the view of showing the existing evidence for or against the suggestion that several specimens referred to the latter of these two sub-families may really belong to the former.

Geological Society, January 22.—Dr. Henry Woodward, F.R.S., President, in the chair.—Mr. W. W. Watts, in the absence of Prof. Lapworth, called attention to three specimens of sandstone and limestone containing specimens of some species of *Hyolithes*, which Prof. Lapworth had found in the higher part of the Cambrian quartzite at Nuneaton in Warwickshire.—The following communications were read:—On the Speeton series in Yorkshire and Lincolnshire, by G. W. Lamplugh. Further work on the Speeton section, while extending the knowledge of the palæontological details, had fully sustained the results of the author's previous investigations. The rapid attenuation and final disappearance of the Speeton series in a westerly direction in Yorkshire was discussed, and though the available evidence was held to be insufficient to demonstrate the exact conditions, it was stated that, contrary to the accepted view, the lower zones were probably the first to die out and were overstepped or overlapped by the higher divisions, since at Knapton, fourteen miles inland, only the upper zones of the coast-section can be proved to occur. In Mid-Lincolnshire all the palæontological zones of Speeton were identified and traced, the presence of the leading zonal types of the cephalopoda readily establishing the general correlation proposed by Prof. A. Pavlow and the author. The President said that it was hardly possible when mapping in the field to do more than follow those petrological changes in the character of beds over any given area which are patent to the observer. The point discussed by the author was that the life-line did not follow the line of the same sedimentation, but life-forms may transgress, and did transgress, over sediments of different character when they happened to be accumulated at the same time. It was hoped, however, that the case propounded by the author was exceptional, and that, as a rule, the sediments and the fossils followed one another on the same lines.—On some Podophthalmous Crustaceans from the Cretaceous formation of Vancouver and Queen Charlotte Islands, by Dr. Henry Woodward, F.R.S.—On a fossil octopus, *Calais Newboldi* (J. de C. Sby., MS.), from the Cretaceous of the Lebanon, by Dr. Henry Woodward, F.R.S.—On transported boulder clay, by the Rev. Edwin Hill. The "mid-Glacial" sands of the cliffs between Yarmouth and Lowestoft are overlain at Corton by chalky boulder clay. But farther north than Corton some masses of the same clay occur in the interior of the cliffs, surrounded by the sands in undisturbed stratification, but passing into them by strings and patches such as suggest the melting off of enveloping ice. They had probably been floated and dropped there. The observations suggest that chalky boulder clay was being manufactured in one locality simultaneously with "mid-Glacial" sands in another.

Mineralogical Society, February 4.—W. W. Watts in the chair.—Mr. L. J. Spencer gave an account of some of the results he had obtained in the course of an examination of various massive and fibrous forms of calcite and aragonite.—Mr. F. Rutley read a paper relative to associated globular and rhombohedral forms of rhodochrosite and chalybite from Cornwall.—Mr. G. T. Prior described the microscopic characters of certain rocks, allied to Monchiquite, collected by Mr. Ridley in Fernando Noronha, Brazil.—Mr. W. J. Pope explained a method of determining the optic axial angle for the case where the faces of the investigated plate are oblique to a bisectrix, and demonstrated the phosphorescence of saccharin crystals on fracture.

Zoological Society, February 4.—Dr. A. Günther, F.R.S., Vice-President, in the chair.—Mr. G. A. Boulenger, F.R.S., read a report on the second portion of the reptiles and batrachians collected by Dr. A. Donaldson Smith during his recent expedition to Lake Rudolph, the first portion having been already described. In the present report forty-two species of reptiles and five of batrachians were catalogued—of which two lizards were described as new, under the names *Agama smithi* and *A. lionotus*.—Dr. A. Günther read a report on the collection of fishes made by Dr. Donaldson Smith during his expedition to Lake Rudolph. From Lakes Rudolph and Stephanie examples of eight species of fishes had been obtained. Of these, five were species also found in the Nile-basin, and mostly of wide distribution in Africa; while one (*Distichodus rudolphi*) was new to science. Two other species were also described as new, and named *Clarias smithi* and *Synodontis smithi*, after their discover.—Mr. Martin Jacoby offered some remarks on the system of coloration and punctuation in the beetles of the genus *Calligrapha* of the family Chrysomelidæ.—Mr. F. E. Beddard, F.R.S., read a paper on the oblique septa in Passerine and other birds, in which he pointed out a new character of Passerine birds.—A second paper, by Mr. Beddard, contained a note upon the syrinx and the ambiens muscle of an African stork (*Dissura episcopus*), and comprised some remarks upon the classification of the Herodiones.—A communication from Mr. R. Lydekker, F.R.S., contained a note on the mode of progression of the sea-otter.—A communication from Dr. St. George Mivart, F.R.S., contained a description of the hyoid bones of *Nestor meridionalis* and *Nanodes discolor*.

PARIS.

Academy of Sciences, February 3.—M. A. Cornu in the chair.—Notice was received from the Minister of Public Instruction of the approval, by the President of the Republic, of the election of M. Rouché.—On the equilibrium of an ellipsoidal envelope, by M. L. Lecornu. The problem of a flexible inextensible surface submitted to a given system of forces gives rise to a system of partial linear equations, the integration of which, in general, is not possible. The particular case, however, of an ellipsoidal membrane, which is of considerable practical value on account of its application to the theory of aerostats, can be dealt with by the use of elliptical coordinates, and the results of the integration are given.—The measurement of a section of the Paris base line, with the apparatus of Jäderin, by M. d'Abbadie. By the use of wires of steel and of bronze, of known coefficients

of expansion, a base line can be measured at the rate of 2500 metres *per diem*, as against 400 metres when bars are used as the standards of length.—Solar observations made at the observatory of the Roman College during the second half of 1895, by M. P. Tacchini.—On the complete solutions of the equation

$$x_1 \tan^{-1}\frac{1}{\kappa_1} + x_2 \tan^{-1}\frac{1}{\kappa_2} + \ldots + x_n \tan^{-1}\frac{1}{\kappa_n} = k \cdot \frac{\pi}{4},$$

by M. C. Störmer. A continuation of a note presented to the preceding meeting of the Academy.—On the energy dissipated in magnetisation, by M. Maurain. An attempt to measure the energy dissipated by iron and steel wires in a closed magnetic cycle when the variations in the strength of the field are very rapid (see p. 350).—Resistance of thin metallic sheets, by M. Ed. Branly.—Observations on a recent note, by M. G. Le Bon, on the "dark light," by M. G. H. Niewenglowski. A repetition of M. Le Bon's experiment, carried out in complete darkness, still gave a similar result, showing that the image is due to stored-up luminous energy.—Photography with dark light, by M. Gustave Le Bon. In further experiments made on this subject especial care has been taken to eliminate the possible influence of heat, and of light stored up in the plates.—New properties of the X-rays, by MM. L. Benoist and D. Hurmuzescu. The X-rays discharge a gold-leaf electroscope, and this offers a ready method for examining the permeability of various substances to these rays.—Experiments on the Röntgen rays, by M. A. Nodon. These rays are clearly distinguishable from the ultra-violet rays by the fact that the latter, obtained from a powerful arc lamp, fail entirely to affect a sensitive plate protected with several thicknesses of blackened paper. The Röntgen rays readily affect the plate under these conditions.—Transparency of metals for the X-rays, note by M. V. Chabaud. In sheets of 0·2 mm. thickness, platinum and mercury alone are perfectly opaque, while lead, zinc, copper, tin, steel, gold, silver, and aluminium are more or less transparent. In sheets of ·01 mm. thickness, platinum also ceases to be perfectly opaque.—The photography of metallic objects through opaque bodies, by means of the brush of an induction coil, without a Crookes' tube, by M. G. Moreau.—On the acid fluorides, by MM. Meslans and F. Girardet. The method employed is to act on the corresponding chloride with the fluoride of either arsenic, antimony, silver, or zinc. The fluorides of propionyl and of benzoyl were prepared and their properties examined.—Method of preparation of acid fluorides, by M. A. Colson. The acid anhydrides, treated with hydrofluoric acid, give the corresponding acid fluoride and acid. The chlorides of acetyl and propionyl are very easily obtained in this way.—On a hydride of lithium, by M. Guntz. Lithium, at a low red heat, absorbs about seventeen times its volume of hydrogen without any change of appearance; at about a red heat further absorption commences, and on cooling the lithium is seen to be covered with a layer of hydride. This was prepared in a pure state, and proved to be LiH.—The negative reaction and the centre of the retina, by M. Aug. Charpentier.—Researches on the embryonic nervous system of the Nauplius and of some larvæ of marine animals, by M. N. de Zograf.—On an Ophidian of the cretaceous earths of Portugal, by M. H. E. Sauvage.—Physiological researches on the respiration of fishes (*Ammodytes tobianus*), by M. J. B. Pieri. This fish was able to completely extract the oxygen from a solution of air in water, although it could not take out all the oxygen from a solution rich in the gas. Asphyxia is never instantaneous, even when the *Ammodytes* is introduced into water completely freed from dissolved oxygen. This fish can exist without inconvenience in water containing a considerable quantity of dissolved carbon dioxide.—Observations on the cephalic vesicle of insects of the family Muscides, by M. A. Laboulbène.—*Mucor* and *Trichoderma*, by M. Paul Vuillemin. Some remarks on a paper of M. J. Ray on the parasitism of a *Trichoderma* on a supposed new species of *Mucor*.—On the geological characters of the auriferous conglomerates of the Transvaal, by M. L. de Launay.—On the bed of eruptive and metamorphic rocks of the basin of Lavol, by M. D. P. Œhlert.—Petrographic study of the Albitophyres of the Laval basin, by M. Michel Lévy.—The effects of the solar displacements, considered by themselves, on the barometric pressures of the zone 10° to 30° N., by M. A. Poincaré.—On a meteor seen at Baleine on January 6, 1896, by M. Doumet-Adanson. This meteor, the appearance of which was noted to the Academy on January 13, was seen at Baleine at 5.7 p.m. (Paris time), passing horizontally, about 25° above the horizon.

BERLIN.

Meteorological Society, January 7.—Prof. Börnstein, President, in the chair.—Prof. Kremser spoke on the duration of sunshine over Europe, basing his remarks on the data available from the various stations. The mean duration increases from the north towards the south, being least in Scotland and greatest in Spain. There is also a distinct increase from the west eastwards. It is less on mountains than over open plains, except at very high stations which are frequently above the level of the clouds and mist. All stations show a yearly minimum in the winter solstice, and a maximum in the summer; the latter occurs as early as May in Scotland, in June over Germany, and in July over Spain. There is no such annual variation observable at the highest stations. The amplitude of the annual curve is less when based on the percentage of observed to possible duration of sunshine. The curve of daily variation rises sharply in the morning, is then steady for some time, and falls again sharply towards the evening. At high stations the daily maximum occurs in the afternoon.

AMSTERDAM.

Royal Academy of Sciences, November 30, 1895.—Prof. Van de Sande Bakhuyzen in the chair.—Prof. Engelmann treated the following subjects. (1) The influence of the pulse frequency upon the physiological conductive power of the ventricular muscle. (2) A means of rendering extra-polar electric impressions upon muscles and nerves impossible.—Prof. Lorentz read a paper on Poynting's theorem concerning the transfer of energy in the electromagnetic field, and on two general propositions in the theory of light. After showing how Poynting's theorem may serve to calculate the energy of a magnetised body and the development of heat due to magnetic hysteresis, the author discussed a more general formula, already used by Volterra. The application of this equation to the propagation light (homogeneous and of constant intensity) leads in the first place to a well-known law of reciprocity (viz. a relation between the vibrations at a point A, caused by a source of light at B, and the vibrations at B, produced by a source at A) and in the second place to a generalisation of "Huygens' principle." If, in a system of conducting or dielectric, isotropic, or anisotropic bodies, surrounded on all sides by the ether, a closed surface be arbitrarily chosen, so, however, that all sources of light are external to it, then a definitive distribution of sources of light over this surface may be indicated, which would give rise at all internal points to the same vibrations as are produced by the external sources.—Prof. Kamerlingh Onnes communicated Dr. Zeeman's further measurements on the absorption of electrical waves in different electrolytes. The results are: (1) the intensity of electrical vibrations (wave-length 6·5 m.) decreases to one-third of its original value when the vibrations pass a layer of a solution of sulphate of copper, 5 per cent. c.m. in thickness, the resistance being $3340 \cdot 10^{-10}$ that of mercury. (2) Different aqueous solutions of the same conductivity absorb vibrations of the same frequency in the same degree.—Dr. W. van Bemmelen has drawn the lines of equal secular variation of the magnetic declination for the period 1540-1880. The values of the yearly variations have been determined by measuring the inclination of the curves on his map, which shows the curves of the secular variation for 8 × 18 intersections of meridians and parallels (meeting of September 28).—The maps for 1780 and 1880 show that Bauer's isoclinal poles lie in the immediate vicinity of the lines of maximum variation; whilst the whole system of maps points out the fact that in the tropical zone these lines and the agonic lines accompany each other. The mean yearly rates of shifting of the poles, the agonic lines and the maximum lines, viz. 0°·194, 0°·184 and 0°·21, agree very closely.

December 28, 1895.—Prof. van de Sande Bakhuyzen in the chair.—Prof. W. Kapteyn gave a new treatment of a problem on *Analysis situs*.

GÖTTINGEN.

Royal Society of Sciences.—The third part of the *Nachrichten* (physico-mathematical series) for 1895 contains the following papers communicated to the Society:—

May 25.—On the development of *Dadocrinus gracilis* (von Buch) and *Holocrinus Wagneri* (Ben.), and their relation to other crinoids, by A. von Koenen.

June 15.—On the integration of the partial differential equation $\Delta u + k^2 u = 0$ on Riemann's surfaces, by A. Sommerfeld.—The hypsographic curve of the earth's crust and the relations of Romieux by Hermann Wagner.

July 6.—On certain regularities in the spectra of solid bodies, and on a new determination of the sun's temperature, by F. Paschen.

July 20.—Researches (ii.) from the Göttingen University Laboratory: (1) On new instances of isomerism and abnormal molecular refraction in certain cyclic ketones; (2) on pulegon, by O. Wallach.—Report on the scientific memoirs issued from the Göttingen University Pathological Institute in the session 1894-95, by J. Orth.

October 19.—(1) Contributions to the theory of algebraic numbers; (2) the unimodular substitutions in an algebraic *Zahlenkörper*, by A. Hurwitz.—On a geometrical representation of the ordinary development of a continued fraction, by F. Klein.—On the regions of discontinuity of the groups of real linear substitutions of a complex variable, by Robert Fricke.—On the foundations of the theory of "ideals," by Ph. Furtwängler.

November 2 (Commemoration-day).—On the "arithmetisation" of mathematics, by F. Klein.

DIARY OF SOCIETIES.

LONDON.

THURSDAY, FEBRUARY 13.

ROYAL SOCIETY, at 4.30.—On the Behaviour of Argon and Helium when submitted to the Electric Discharge: Dr. J. N. Collie and Prof. Ramsay, F.R.S.—On the Generation of Longitudinal Waves in Ether: Lord Kelvin, F.R.S.—On the Discharge of Electricity produced by the Röntgen Rays, and the Effects produced by these Rays on Dielectrics through which they pass: Prof. J. J. Thomson, F.R.S.

SOCIETY OF ARTS, at 4.30.—Punjab Irrigation—Ancient and Modern: Sir James Broadwood Lyall, G.C.I.E., K.C.S.I.

MATHEMATICAL SOCIETY, at 8.—Geodesics on Quadrics, not of Revolution: Prof. Forsyth, F.R.S.—Solid Ellipsoidal Vortex: R. Hargreaves.—Potential of a Cyclide: A. L. Dixon.

ROYAL INSTITUTION, at 3.—Some Aspects of Modern Botany: Prof. H. Marshall Ward, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Electric Wiring Question: F. Bathurst.—Concentric Wiring: Sam. Mavor.

SOCIETY OF ANTIQUARIES, at 8.30.

GRESHAM COLLEGE (Basinghall Street, E.C.), at 6.—The Planet Jupiter: Rev. E. Ledger.

FRIDAY, FEBRUARY 14.

ROYAL INSTITUTION, at 9.—Fish Culture: J. J. Armistead.

PHYSICAL SOCIETY, at 5.—Annual General Meeting.—On the Determination of High Temperatures with the Meldometer: W. Ramsay and N. Eumorfopnilos.

ROYAL ASTRONOMICAL SOCIETY, at 3.—Annual Meeting.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Construction of the Molong to Forbes Railway, New South Wales: Sydney Thow.

MALACOLOGICAL SOCIETY, at 8.—Annual Meeting.

GRESHAM COLLEGE, at 6.—The Planet Jupiter: Rev. E. Ledger.

SUNDAY, FEBRUARY 16.

SUNDAY LECTURE SOCIETY, at 4.—Water Skin: Douglas Carnegie.

MONDAY, FEBRUARY 17.

SOCIETY OF ARTS, at 8.—The Chemistry of certain Metals and their Compounds used in Buildings, and the Changes produced in them by Air, Moisture, and Noxious Gases, &c.: Prof. J. M. Thompson.

VICTORIA INSTITUTE, at 4.30.—China: Dr. Gordon.

TUESDAY, FEBRUARY 18.

ROYAL INSTITUTION, at 3.—External Covering of Plants and Animals; Prof. C. Stewart.

SOCIETY OF ARTS, at 8.—The Development of Electrical Traction Apparatus; H. F. Parshall.

ZOOLOGICAL SOCIETY, at 8.—On the Butterflies obtained in Arabia and Somaliland by Captain Chas. G. Nurse and Colonel J. W. Yerbury in 1894-95: Dr. Arthur G. Butler.—On Moths collected at Aden and in Somaliland: Lord Walsingham, F.R.S., and G. F. Hampson.—Observations on the Metallic Colours of the Trochilidæ and the Nectariniidæ (communicated by F. E. Beddard, F.R.S.): Miss Marion Newbigin.

INSTITUTION OF CIVIL ENGINEERS, at 8.—The Manufacture of Aluminium by Electrolysis; and the Plant at Niagara for its Extraction: Alfred Ephraim Hunt.

ROYAL STATISTICAL SOCIETY, at 5.—Mental and Physical Conditions among 50,000 Children seen 1892-94, and the Methods of Studying Recorded Observations, with special reference to the Determination of the Causes of Mental Dulness and other Defects: Dr. Francis Warner.

ROYAL PHOTOGRAPHIC SOCIETY, at 8.

PATHOLOGICAL SOCIETY, at 8.30.

ROYAL VICTORIA HALL, at 8.30.—Flowers and their Insect Visitors: Dr. Kimmins.

WEDNESDAY, FEBRUARY 19.

SOCIETY OF ARTS, at 8.—Report of the Royal Commission on Secondary Education: H. Macan.

ROYAL METEOROLOGICAL SOCIETY, at 7.30.—Report on the Phenological Observations for 1895: Edward Mawley, President.—Notes on the Recent unusually High Barometer Readings in the British Isles: Robert H. Scott, F.R.S.—Turner's Representations of Lightning: Richard Inwards.

ROYAL MICROSCOPICAL SOCIETY, at 8.

ENTOMOLOGICAL SOCIETY, at 8.—Notes on Flower-Haunting Diptera: G. F. Scott-Elliot.—On the Nomenclature of the Geometridæ: A. Radcliffe-Grote.

THURSDAY, FEBRUARY 20.

ROYAL SOCIETY, at 4.30.—Bakerian Lecture—The Diffusion of Metals: Prof. Roberts-Austen, F.R.S.

ROYAL INSTITUTION, at 3.—Some Aspects of Modern Botany: Prof. Marshall Ward, F.R.S.

LINNEAN SOCIETY, at 8.—On Discoveries resulting from the Division of a Prothallus of a Variety of Scolopendrium vulgare: E. J. Lowe, F.R.S.

CHEMICAL SOCIETY, at 8.—Origin of Colour: the Yellow 2:3 Hydroxynaphthoic Acid; Note on Etherification; The Relation of Pinene to Citrene: Prof. Armstrong, F.R.S.

LONDON INSTITUTION, at 6.—My Voyage to Siberia: Captain Wiggins.

NUMISMATIC SOCIETY, at 7.

SOCIETY OF ANTIQUARIES, at 8.30.

FRIDAY, FEBRUARY 21.

GEOLOGICAL SOCIETY, at 3.—Annual General Meeting.

ROYAL INSTITUTION, at 9.—The Past, Present, and Future Water Supply of London: Dr. E. Frankland, F.R.S.

INSTITUTION OF CIVIL ENGINEERS, at 8.

QUEKETT MICROSCOPICAL CLUB, at 8.

SATURDAY, FEBRUARY 22.

ROYAL INSTITUTION, at 3.—Light: Lord Rayleigh, F.R.S.

ROYAL BOTANIC SOCIETY, at 3.45.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Cocoa, all about it: "Historicus" (Low).—Links in a Long Chain: Mrs. A. Bell (Philip).—Annuaire de l'Observatoire Municipal de Montsouris, 1896 (Paris, Gauthier-Villars).—Cours de Physique de l'École Polytechnique: Prof. M. Bouty, premier supplément (Paris, Gauthier-Villars).

PAMPHLETS.—Atlas des Isanomales et des Variations Séculaires du Magnétisme Terrestre: Lieut.-Géneral A. de Tillo (St. Pétersbourg).—Royal Gardens, Kew: Hand-List of Orchids cultivated in the Royal Gardens (Eyre).

SERIALS.—Scribner's Magazine, February (Low).—Transactions of the English Arboricultural Society. Vol. 3, Part 1 (Carlisle).—Geological Magazine, February (Dulau).—Engineering Magazine, February (Tucker).—Massachusetts Institute of Technology, Boston, Annual Catalogue, 1895-96 (Cambridge, Mass.).—American Journal of Science, February (New Haven).—Bulletin de l'Académie Royale des Sciences, &c., de Belgique, Tome 30, No. xii. (Bruxelles).—Proceedings of the Royal Society, Edinburgh, Session 1894-95, Vol. xx. pp. 481-546 (Edinburgh).—Bulletin of the American Mathematical Society, January (New York, Macmillan).

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