

other educational bodies have been invited to attend the conference by the National Association for the Promotion of Technical and Secondary Education.

IN connection with the seventeenth annual Exhibition of Arts, Crafts and Industries, which will be opened on May 4 in the Town Hall, Hammersmith, by the Duchess of Argyll, a special "nature-study" section has been organised by Mr. W. M. Webb. Prizes and certificates are offered to pupils in schools in Hammersmith for exhibits illustrating, among other subjects, rambles or visits to a park, nature-study diaries, pea plants grown in pots with descriptions of their growth, drawings of living plants or animals, the life-history of any animal (in the wide sense of the word) from personal observation, and nature-study photographs.

THE committee of the Bombay University, appointed to consider the recommendations of the recent Universities Commission, has, we learn from the *Pioneer Mail*, come to the conclusion that both the Senate and the Syndicate work satisfactorily and need not be changed; second-grade colleges should not be disaffiliated; a limit of age and minimum fees should not be fixed, and the study of law should not be concentrated in a central college. Moreover, the Senate objects to interference from outside with the courses of study, and considers that the University should be allowed to control such matters in its own way.

THE Johnston Laboratory at University College, Liverpool, built and equipped by Mr. William Johnston, of Bromborough, will be opened by the President of the Local Government Board on May 9. The laboratory will contain the following departments:—Bio-chemistry, under the direction of Prof. Benjamin Moore; tropical medicine, directed by Prof. Ronald Ross, F.R.S.; experimental medicine and comparative pathology, directed by Dr. A. S. Grünbaum, who will also have charge of the cancer research, for which, as we have already announced, Mr. T. Sutton Timmis recently provided a gift of 10,000*l.* Mr. Johnston has also endowed the professorship of bio-chemistry and three fellowships in various branches of medical research.

SIR OWEN ROBERTS distributed the prizes and certificates to the students of the South-Western Polytechnic on February 23. The report of the principal, Mr. Herbert Tomlinson, F.R.S., was read, and showed the number of adult students in the institute to be rapidly increasing, so much so, indeed, that the volume of work as estimated by the student hours has in the last four years been doubled. During last session upwards of 600 students entered the day colleges for men and women, and nearly 1800 the evening classes. Two years ago large additions, costing 12,000*l.*, were made to the buildings, but these proving insufficient, a still further sum of 13,000*l.*, provided, like the former sum, by the Trustees of the London Parochial Charities and the London County Council, is now being expended in providing a large hall and further workshop and laboratory accommodation. The long list of successes of students shows that the number of certificates gained during last session was above 150 more than in the previous year, but, as was pointed out by the principal, the proper function of the institute is not merely to prepare students for examinations, but to fit them to earn a living, and the institute owes a good deal of its popularity to the recognition of this by the management.

THE address on science workshops for schools and colleges delivered by Prof. H. E. Armstrong, F.R.S., to the Royal Institute of British Architects last month is printed in full in the *Journal of the Institute* (vol. x. No. 6). Prof. Armstrong illustrated his arguments by reference to the new buildings at Horsham for Christ's Hospital School, of which he is a governor. The science buildings occupy practically one side of the quadrangle, and the floor area of the rooms they contain is 10,326 square feet, while that of the ordinary class rooms of the school only reaches 15,482 square feet. The four chief rooms in the science block are called science "workshops," and are distinguished by the names of Cavendish, Dalton, Davy and Faraday, and to each of these are attached certain subsidiary rooms. No lecture room is provided, since it is desired to discourage didactic teaching—a demonstration bench in the workshop amply provides for any such teaching as is necessary. No special balance room has been introduced, but instead a balance bench—a long

narrow table covered by a glazed case for the protection of balances, and arranged at right angles to the working benches. A store or stock room is attached to each of the workshops. There are two kinds of working benches, those for ordinary work and those at which work involving the use of water may be done. The former have teak tops, and the latter are covered with lead. In the rooms on the upper floor, all sinks have been placed near to the walls, and the waste is carried down to the floor below in pipes fixed in chases in the walls. On the basement floor, cross channels have been avoided as much as possible. In three rooms an arrangement has been adopted which provides both a gas service and upright supports to which rings, &c., can be clamped. The space below the bench-top is fitted with two tiers of small cupboards; inside each cupboard is a small drawer. Each bench has four such cupboards, so that four pupils may occupy the place in succession, and each have a cupboard. Prof. Armstrong also gives invaluable hints as to the construction of sinks, drains and ventilation hoods, and describes some special appliances which are in use at Christ's Hospital School. The address concludes with a plea for the simplification of school workshops, and the recommendations are well summed up in Prof. Armstrong's own words, "in designing science workshops the architect . . . should have three S's in mind—Sense, Simplicity and Space."

SCIENTIFIC SERIAL.

American Journal of Science, February.—Good seeing, by S. P. Langley. A study of the conditions necessary to the formation of a tranquil image in a telescope (see p. 400).—Native arsenic from Montreal, by N. N. Evans. The native arsenic was found in a vein of nepheline syenite at the Corporation Quarry, near Montreal. On analysis it proved to contain 98.14 per cent. of arsenic, 1.65 per cent. of antimony, with traces of sulphur.—Electromotive force in plants, by A. B. Plowman. The experiments described show that the functional activities of a plant give rise to differences of electrical potential in its parts, the intensity and relative sign of these differences depending upon the physiological condition of the plant, as well as upon its electrical conductivity.—The ionisation of water nuclei, by C. Barus.—The morphogenesis of *Platystrophia*. A study of the evolution of a Palaeozoic Brachiopod, by E. R. Cumings.—Note on the condition of platinum in the nickel-copper ores from Sudbury, by C. W. Dickson. An account of the isolation of sperrylite, platinum arsenide, from chalcopyrite.—Lecture experiment on surface tension and surface viscosity, by J. E. Burbank.—*Mylagaulodon*, a new rodent from Oregon, by W. J. Sinclair.—Studies in the Cyperaceæ, by T. Holm. On *Carex fusca* and *Carex bipartita*.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, February 27.—Dr. R. T. Glazebrook, F.R.S., president, in the chair.—A paper by Prof. Fleming and Mr. Clinton, on the measurement of small capacities and inductances, was read by Prof. Fleming. The measurement of small capacities and inductances has become important in connection with Hertzian wave wireless telegraphy. The authors have designed a rotating commutator which renders the measurement of small capacities a matter as easy as the measurement of resistance on a Wheatstone bridge. The appliance is described in the paper, and the authors claim that they have worked out a thoroughly satisfactory form of rotating commutator, designed more from the point of view of an engineer than an electrical instrument maker. For use with the instrument a moving-coil differential galvanometer has been designed. The authors have made a number of experiments upon the capacity of aerial wires, such as are used in Hertzian wave telegraphy, and have also investigated the laws governing the capacity of such wires when grouped together in certain ways and verified experimentally, as far as possible, the formulæ for the capacity of insulated wires in various positions in regard to the earth. The experiments are given at length in

the paper, and the results practically obtained are compared with those derived from theoretical considerations. In all cases the total measured capacity of n wires is less than n times the capacity of one wire.—Mr. A. Campbell exhibited the commutator used for condenser tests at the National Physical Laboratory. It is similar to that designed by Mr. Searle and used by him and Prof. J. J. Thomson in their determination of the value of “ v .” In this commutator the ebonite insulation does not fill the spaces between the segments, and is never touched by the brushes, thus giving satisfactory insulation. By its aid many measurements have been made of the B.A. air-condensers, the capacity of each of these being about 0.02 m.f.d.—A paper on the thickness of the liquid film formed by condensation at the surface of a solid was read by Dr. G. J. Parks. It was known more than half a century ago that when a solid is placed in a gas or vapour there is a condensation of the latter on the surface of the solid, and in particular that glass has the power of condensing water-vapour at temperatures above the dew-point. In order to determine the thickness of the liquid film, the author has exposed masses of cotton-silicate of known area to the action of water-vapour. The author has compared his results with those obtained by other experimenters with different substances and under widely different conditions, and concludes that in all cases where condensation of moisture takes place at a solid surface, and at temperatures not below the dew-point, the thickness of the surface-film varies from 10×10^{-6} to 80×10^{-6} cms., according to the substances used and the conditions of temperature and pressure.

Chemical Society, February 18.—Prof. J. Emerson Reynolds, F.R.S., president, in the chair.—The following papers were read:—The molecular arrangement of N -substituted imino-ethers, by Dr. G. D. Lander. The rearrangement of the atomic grouping $C(OR):N$ into $.CO.NR$. may be effected catalytically or by heating; the author has applied these methods to the study of N -substituted imino-ethers recently prepared by him.—The nature and probable mechanism of the replacement of metallic by organic radicles in tautomeric compounds, by Dr. G. D. Lander.—The chlorine derivatives of pyridine. Part viii. The interaction of 2:3:4:5-tetrachloropyridine with ethyl sodiomalonate, by Messrs. W. J. Sell and F. W. Dootson.—The biological method for resolving inactive acids into their optically active compounds, by Drs. A. McKenzie and A. Harden. The authors have investigated the action of pure cultures of *Penicillium glaucum*, Link; *Sterigmatocystis nigra*, van Tieghem; *Aspergillus griseus*, Link, on various externally compensated acids. Their experiments show that these moulds attack one isomeride more readily than the other, and that the extent of the resolution depends solely on the difference of this rate of attack.—Colour changes observed in solutions of cobalt chloride, by Prof. W. N. Hartley, F.R.S. Spectroscopic examination of solutions of cobalt chloride shows that the compound formed when the solution is heated at 93° – 100° is the dihydrate $CoCl_2 \cdot 2H_2O$, whilst solution of the salt in hydrochloric acid appears to result in the production of a compound of the salt and acid; when zinc chloride is added to a solution of cobalt chloride the latter does not become blue on warming; this, it is suggested, is due to the formation of a double chloride of the two metals. The author also points out that the hypothesis that hydrated salts can exist in concentrated solutions and undergo dissociation with rise of temperature is sufficient to account for all the phenomena observed, and the supposition made by Donnan and Bassett of the existence of a complex ion during the electrolysis of cobalt chloride is unnecessary.—The action of ammonia and organic bases on ethyl esters of olefinedicarboxylic and olefine- β -ketocarboxylic acids, by Dr. S. Ruhemann.—Derivatives of p -aminoacetophenone, by Dr. F. D. Chattaway. A description of a number of acyl derivatives of this amino-ketone.

Entomological Society, February 4.—Prof. E. B. Poulton, F.R.S., president, in the chair.—Dr. T. A. Chapman exhibited two male specimens of *Orina tristis*, var. *smaragdina*, taken at Pino, Lago Maggiore, on May 30, 1902, still alive; and living larvæ of *Crinopteryx familiella*, second generation, bred from the egg at Reigate, of parents taken at Cannes in February, 1901.—The Rev. F. D. Morice

exhibited, with drawings of the abnormal parts, a hermaphrodite of *Eucera longicornis*, Linn. In a discussion on hermaphroditism, Dr. Sharp stated that Father Wasman had announced the discovery that in certain Dipterous parasites of Termites the individual commences as a male and ends as a female—a phenomenon entirely new to entomology, though paralleled in some other groups.—Mr. R. McLachlan, F.R.S., exhibited a living example of *Chrysopa vulgaris*, Schnd., to show the manner in which this species, which is ordinarily bright green, assumes a brownish colour, the abdomen being often marked with reddish spots in hibernating individuals.—Mr. W. J. Lucas submitted specimens of a bug—*Miris calcaratus*—and the fruit of some grass, swept up near Byfleet. The similarity of form and colouring constituted a probable case of protective resemblance.—Major Neville Manders exhibited two specimens of an undescribed species of *Atella* from Ceylon, and remarked that it was a very local insect and only found in the Nitre Cave district, one of the localities most remote from civilisation in the island. It was probably a well-marked local race of *A. alcippe*, but easily distinguished from any known species of the genus by the apex of the fore-wing being entirely black.—Mr. F. B. Jennings exhibited two females of *Drymus pilipes*, Fieb., a rare species of the family Lygæidæ, which were found among dead leaves on a hillside near Croydon in September, 1901, and a black aberration of the ordinarily grass-green or yellowish *Miris laevigatus*, L.—Mr. H. J. Elwes, F.R.S., exhibited a collection of butterflies formed by Mr. David Hanbury on the Arctic coast of North America, in the region where the Parry expedition was lost. Two of them, including *Colias boothii*, had not been taken since they were first described by Curtis sixty years ago. This species, in comparison with *Colias hecla*, Lef., is undoubtedly distinct in both sexes, but it is most remarkable that the male, in coloration and markings, appears to approximate more closely to the characters usual in the females of other members of the genus. The collection contained nothing new, but included the rare and curious *Argynnis improba*, Butler, hitherto taken only in Novaya Zembla; a remarkable aberration of *A. chariclea*, Schn., in which the black netting marks were resolved into smeared black lines; *A. pales*, for the first time from this region, precisely similar to the form taken on the east of the Lena River in Siberia; and *Coenonympha tiphon*, closely resembling the form from Kamtschatka. He also showed a collection from north-eastern Siberia at about the same latitude, 67° , as the preceding exhibit. It included many species which occur in the western palæarctic regions, most remarkable of all, *Neptis lucilla*. Also *Parnassius delius*, which Mr. Elwes said was the first *Parnassius* he had seen from within the Arctic circle, and *Colias viluensis*, Mén., an insect peculiar to Siberia, showing remarkable female aberrant forms.—Mr. C. O. Waterhouse gave an account of a nest of a bee, *Trigona collina*, recently received from Malacca. Specimens were exhibited, as were also males and a worker of the much smaller species, *Trigona ruficornis*, Smith, received at the same time from Singapore, and sent by Mr. H. N. Ridley.—Mr. W. J. Kaye exhibited two drawers containing Danaine, Ithomiine and Heliconine species from British Guiana, all of similar coloration, and forming a Müllerian association with a black hind-wing.—The following papers were communicated:—On the Hyspid genus *Deilemera*, Hübner, by Colonel Charles Swinhoe.—An account of a collection of Rhopalocera made in the Anambara Creek in Nigeria, West Africa, by Mr. P. J. Lathy.—Some notes on the habits of *Nanophyes durieui*, Lucas, as observed in Central Spain by Mr. G. C. Champion and Dr. T. A. Chapman, with a description of the larva and pupa by Dr. T. A. Chapman.

Zoological Society, February 17.—Dr. Henry Woodward, F.R.S., vice-president, in the chair.—A communication was read from Mr. F. Pickard-Cambridge containing descriptions of one new genus and eight new species of spiders of the families Pisauridæ and Senoculidæ, the material for which was contained in the British Museum, and was, to a great extent, obtained by the author in the Lower Amazons.—A communication from Mr. Cyril Crossland contained descriptions of two new species of marine polychæte worms obtained on the shores of the Island of Zanzi-

bar, in East Africa.—A communication was read from Dr. Robert **Broom** on the axis, atlas and proatlax of the higher Theriodonts. A description of these bones in the type specimens of Gomphognathus and Trirachodon, now preserved in the Grahamstown Museum, was given, and suggestions thrown out as to the relationship of these forms and Procolophon to the modern Sphenodon and crocodiles.—Mr. C. Tate **Regan** contributed a paper entitled "A Revision of the Fishes of the Genus *Triacanthus*," in which seven species were described, one of them, *T. indicus*, being new to science.—Mr. G. A. **Boulenger**, F.R.S., read a paper on the geographical variations of the sand-viper (*Vipera ammodytes*), in which he distinguished a geographical race (var. *meridionalis*) from Greece, the Archipelago and Syria, from the typical form found in Austria-Hungary and Bosnia.—Mr. F. G. **Parsons** read an account, drawn up by Mr. George Candler, of the habits of the hoolock (*Hylobates hoolock*), as observed by him in the forests of Cachar, in north-east India.

MANCHESTER.

Literary and Philosophical Society, February 3.—Mr. Charles Bailey, president, in the chair.—Prof. Osborne **Reynolds**, F.R.S., exhibited and explained some models illustrating his mechanical theory of the structure of the universe, propounded in his paper on the submechanics of the universe, read before the Royal Society.—Mr. C. E. **Stromeyer** read a paper on parallax determinations by photography, in which he dealt with the advantages photography offers for rapid and accurate surveys. The principle recommended was to superimpose the image of a photographic negative taken at one position on the image of a photographic positive taken at another position, the parallax, or angle which separates two positions as seen from any of the objects in the photographs, being measured microscopically by shifting one of the images until the object registers and disappears. It was suggested that the best results would be obtained by placing the two photographs in two lanterns and superimposing the images on a screen or into a microscope eyepiece, but the instrument shown was arranged to suit a single lantern, the negative and the positive being placed film to film.—Mr. W. B. **Baron** read a paper (communicated by Mr. Stromeyer) on the influence of hydrogen in fuel on the composition of the resulting flue gases. He showed that by making the gas analysis, usually undertaken in boiler trials, with little more than ordinary care, and applying various corrections thereto, the relation of hydrogen to other combustible in the fuel can be accurately found.

DUBLIN.

Royal Dublin Society, February 17.—Pro. J. Joly, F.R.S., in the chair.—Dr. G. Johnstone **Stoney**, F.R.S., read a paper entitled "How to Introduce Order in the Relations between British Weights and Measures." The paper describes a proposal for legislation which the author submitted two years ago to the Board of Trade. Its aim is to get rid of the irrationality between the two methods of measurement, without its being necessary for Parliament to call upon the inhabitants of this country to make any change in their habits of thought, or the practice to which they are accustomed, until they themselves choose to do so. The main parts of the proposal are that an Act be passed making the yard exactly nine-tenths of the metre, the avoirdupois pound exactly nine-tenths of the metric pound or half kilogram, and the imperial gallon exactly nine-tenths of the metric gallon or half dekalitre. They at present differ from these amounts by small but very troublesome fractions.—Mr. David **Houston** communicated a paper on the value of bacteriological tests in judging the butter exhibited at agricultural shows. The author had submitted all the butter exhibits that had gained prizes at the Society's winter show at Ball's Bridge to a detailed bacteriological examination, and had also visited many of the contributing creameries with the object of checking laboratory results. The experiments, it was claimed, proved the fallacy of ordinary methods of judging the quality of butter, and demonstrated the utility of bacteriological tests, at least as an auxiliary to the usual method, in determining the real value of butter.—Mr. G. H. **Carpenter** read a paper on injurious insects

and other animals observed in Ireland during the year 1902. The most important records were the flour moth (*Ephestia kuehniella*) in Belfast Mills, and a new species of Australian weevil (*Syagrius intrudens*, Waterh.) as a greenhouse pest in the Royal Botanic Gardens, Glasnevin. Mention was also made of the injury to various vegetable stems and roots by Enchytræid worms.—Dr. Henry H. **Dixon** presented two criticisms on the cohesion theory of the ascent of sap. In this paper Steinbrinck's objection, based on the permeability of the walls of the conducting tubes to air, is shown to be invalid. Air passing through the wet walls must be in solution, and it has been shown by experiment that saturation of water by air does not appreciably lessen its tensile strength. Secondly, Copeland's criticism, founded on experiments made with plaster of Paris, is shown to involve perpetual motion. The true explanation of Copeland's results is to be found in the continued absorption of plaster of Paris after setting, combined with its great resistance to the passage of water.

PARIS.

Academy of Sciences, February 23.—M. Albert Gaudry in the chair.—The law of electromotive forces in saline solutions: the influence of temperature, by M. **Berthelot**.—On tuberculosis and diaphysis of the long bones of the limbs and its treatment, by M. **Lannelongue**. If the tuberculous abscess or tuberculome is not too large, a cure may be effected by a simple washing with an antiseptic liquid containing iodoform, creosote, ether and olive oil. In more severe cases the abscess must be opened, and the whole of the inside surface scraped with a cuvette. If due care is taken, the abscess is not liable to recur.—The action of a polarised bundle of very refrangible radiations on very small electric sparks, by M. R. **Blondlot**. The action of the X-rays from a focus tube upon an electric spark has shown that these rays are polarised; it appeared to be of interest to see if a similar action could be traced in the case of a bundle of polarised light rays. The whole of the experiments described show that a bundle of polarised light rays produces a notable reinforcement of the spark when its plane of polarisation is normal to the spark, and does not act on it when its plane of polarisation is parallel to it; in other words, there is a plane of action of polarised light upon the small spark, and this plane is normal to the plane of polarisation.—Prof. Koch was elected a foreign associate in the place of the late Prof. Virchow.—On a particular class of triple orthogonal systems, by M. C. **Guichard**.—On the resistance of perfect gases to the movement of solids, by M. L. **Jacob**.—A hydro-tachymeter for regulating hydraulic turbines, by M. L. **Ribourt**. The new form of governor, a description of which with drawings is given, has worked very satisfactorily in practice. In that form of turbine most difficult to regulate, small power with a low fall, the variations of velocity have been kept constant within 2 per cent., although the variations of resistance amounted to 30 per cent.—The variations in the modulus of elasticity in nickel steels, by M. C. E. **Guillaume**. The method employed consisted in observing at different temperatures a chronometer furnished with a spiral of the alloy under examination mounted on a brass balance. Alloys containing 26 per cent. and 45 per cent. of nickel possessed the smallest temperature coefficient.—On the spontaneous reduction of the amount of carbon in steel, by M. G. **Belloc**. The sudden heating of a hard steel wire spiral in a vacuum gives a greyish metal, soft and incapable of being tempered. This effect appears to be intimately connected with the presence of occluded gases, since it is not produced if occluded gases are absent.—On the influence of certain modes of treatment on the microscopic structure of certain nickel steels, by M. Léon **Guillet**. Micrographic observations show the effects of tempering, annealing and hammering on nickel steels more clearly than mechanical tests, and in shorter time.—On the products of reduction of copper salts by hydroxylamine, by M. E. **Péchar**. An ammoniacal solution of copper sulphate is decolorised by sulphate of hydroxylamine, nitrogen and nitrous oxide being evolved. From an ammoniacal solution of copper acetate cuprous acetate can be readily obtained by hydroxylamine sulphate.—The action of urea upon pyruvic acid, by M. L. J. **Simon**.—On some phosphorus derivatives of benzophenone and

methyl-propyl-ketone, by M. C. Marie. The phosphorus compounds described were obtained by heating together hypophosphorous acid and various ketones.—On the results obtained in the distillery by the application of yeasts acclimated to the volatile toxic principles present in the molasses from beetroot, by M. Henri Alliot. Satisfactory results have been obtained in practice by the use of acclimated yeasts, the alcoholic fermentation taking place in a liquid not only containing substances detrimental to yeasts, but also contaminated with foreign bacteria.—Experimental researches on epithelial hyperplasia and on the transformation of epithelium into conjunctive tissue, by M. Ed. Retterer. The irritation which produces on the epidermis the loosening of the skin gives rise to evolutive phenomena which recall very nearly those of cartilage in the course of ossification. The cells proliferate and give rise to new cells, which are transformed into reticular and vascular conjunctive tissue.—The series of the genus Absidia, by M. Paul Vuillemin.—On the interpretation of the arrangement of the bundles in the petiole and leaf veins of the dicotyledons, by M. Col.—Eruptions of the secondary period in the Island of Crete, by M. L. Cayeux. The eruptive rocks in Crete form a part of the strata which have been identified with the Upper Jurassic. The eruptive rocks have metamorphosed the upper strata in which they are included, and leave absolutely untouched the more recent strata.—The lower Devonian in the region of Kosva (Northern Ural), by MM. L. Duparc, L. Mrazec and F. Pearce.—On the faults at Poitou, between Parthenay, Niort and Poitiers, by M. Jules Welsch.

DIARY OF SOCIETIES.

THURSDAY, MARCH 5.

ROYAL SOCIETY, at 4.30.—The Resistance of the Ions and the Mechanical Friction of the Solvent: Prof. F. Kohlrausch, For. Mem. R.S.—The Electrical Conductivity of Solutions at the Freezing Point of Water: W. C. D. Whetham, F.R.S.—A Note on a Form of Magnetic Detector for Hertzian Waves adapted for Quantitative Work: Prof. J. A. Fleming, F.R.S.—On the Laws Governing Electric Discharges in Gases at Low Pressures. Communicated by Prof. J. J. Thomson, F.R.S.: W. R. Carr.—The Differential Invariants of a Surface, and their Geometric Significance: Prof. A. R. Forsyth, F.R.S.

ROYAL INSTITUTION, at 5.—Insect Contrivances: Prof. L. C. Miall, F.R.S. SOCIETY OF PUBLIC ANALYSTS, at 8.

CHEMICAL SOCIETY, at 8.—The Mechanism of the Reduction of Potassium Bichromate by Sulphurous Acid: H. Bassett.—The Constitution of Pilocarpine. Part IV.: H. A. D. Jowett.—Preparation and Properties of 1:4 (or 1:5)-Dimethyl Glyoxaline and 1:3-Dimethyl Pyrazole: H. A. D. Jowett and C. E. Potter.—Some Analyses of "Reh," or the Alkaline Salts in Indian Usar Land: E. G. Hill.—Experiments on the Synthesis of Camphoric Acid. Part III. Synthesis of Isolauronic Acid: W. H. Perkin, Jun., and J. F. Thorpe.—Camphor- β -thiol: T. M. Lowry and G. C. Donington.—Isomeric Change of Dibenzanilide into Benzoyl- α -amino- and Benzoyl- β -amino-benzophenone: F. D. Chattaway.—The Rate of Decomposition of Diazo-compounds. Part III. The Temperature Coefficient: J. C. Cain and F. Nicoll.

LINNEAN SOCIETY, at 8.—On some Points in the Visceral Anatomy of the Characidae: W. S. Rowntree.—On the Anatomy of the Pig-footed Bandicoot *Chaeropus castanotis*: F. G. Parsons.—Further Notes on Lemurs: Dr. Elliot Smith.

RÖNTGEN SOCIETY, at 8.30.—Spark Phenomena: F. H. Glew.

FRIDAY, MARCH 6.

ROYAL INSTITUTION, at 9.—Studies in Experimental Phonetics: Prof. J. G. McKendrick, F.R.S.

GEOLOGISTS' ASSOCIATION, at 8.—The Pliocene Bone Bed of Concup, Teruel, Spain: Dr. A. Smith Woodward, F.R.S.—On the Zones of the Upper Chalk in Suffolk: A. J. Jukes-Browne.

SATURDAY, MARCH 7.

ROYAL INSTITUTION, at 3.—Light: Its Origin and Nature: Lord Rayleigh.

MONDAY, MARCH 9.

SOCIETY OF ARTS, at 8.—Hertzian Wave Telegraphy in Theory and Practice: Prof. J. A. Fleming, F.R.S.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—A Buried Landscape in the English Midlands: Prof. W. W. Watts.

TUESDAY, MARCH 10.

ROYAL INSTITUTION, at 5.—Recent Advances in Photographic Science: Sir William Abney, K.C.B.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Recent Irrigation in the Punjab: S. Preston.—The Irrigation Weir across the Bhadar River, Kathiawar: J. J. B. Benson.

WEDNESDAY, MARCH 11.

SOCIETY OF ARTS, at 8.—Existing Laws, By-Laws and Regulations relating to Protection from Fire, with Criticisms and Suggestions: T. Brice Phillips.

GEOLOGICAL SOCIETY, at 8.—Petrological Notes on Rocks from Southern Abyssinia collected by Dr. R. Koettlitz: Dr. Catherine A. Raisin.—The Overthrust Torridonian Rocks of the Isle of Rum and the Associated Gneisses: Alfred Harker, F.R.S.

THURSDAY, MARCH 12.

ROYAL SOCIETY, at 4.30.—*Probable Papers*:—On the Histology of *Uredo dispersa*, Erikks., and the "Mycoplasma" Hypothesis: Prof. Marshall Ward, F.R.S.—A Study of a Unicellular Green Alga, occurring in Polluted Water, with Special Reference to its Nitrogenous Metabolism:

Miss H. Chick.—A Comparative Study of the Grey and White Matter of the Motor Cell Groups and of the Spinal Accessory Nerve in the Spinal Cord of the Porpoise (*Phocaena communis*): Dr. D. Hepburn and Dr. D. Waterston.—The Oestrous Cycle and the Formation of the Corpus Luteum in the Sheep: F. H. A. Marshall.—On the Culture of the Nitroso-bacterium: H. S. Fremlin.—Upon the Immunising Effects of the Intracellular Contents of the Typhoid Bacillus as Obtained by the Disintegration of the Organism at the Temperature of Liquid Air: Dr. A. Macfadyen.

ROYAL INSTITUTION, at 5.—Insect Contrivances: Prof. L. C. Miall, F.R.S.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Distribution Losses in Electric Supply Systems: A. D. Constable and E. Fawcett.—A Study of the Phenomenon of Resonance in Electric Circuits by the Aid of Oscillograms (abstract): M. B. Field.

SOCIETY OF ARTS, at 4.30.—The Currency Policy of India: J. Barr Robertson.

MATHEMATICAL SOCIETY, at 5.30.—On the Convergence of Certain Finite Series: G. H. Hardy.—On the Representation of a Group of Finite Order as an Irreducible Group of Linear Substitutions and the Direct Establishment of the Relations between the Group-Characteristics: Prof. W. Burnside.—Approximate Calculation of the Periods of Vibration of a Circular Plate: Prof. H. Lamb.—Mathematical Notes: Dr. H. P. Baker.

FRIDAY, MARCH 13.

ROYAL INSTITUTION, at 9.—Character Reading from External Signs: Prof. Karl Pearson, F.R.S.

PHYSICAL SOCIETY, at 5.—On the Interpretation of Milne Seismograms: Dr. Farr.—A Potentiometer for Thermocouple Measurements: Dr. R. A. Lehfeldt.—A Direct-Reading Potentiometer for Thermoelectric Work: Dr. J. A. Harker.—The Measurement of Small Resistances: A. Campbell.—A Resistance Comparator: Dr. R. A. Lehfeldt.

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