a stopped organ pipe giving its first overtone. The cups used varied in size from 7·5 mm. to 4·5 mm., and the lengths of the arms from 20 mm. to 8 mm. The curves found correspond closely to the sine curves near the middle of the loop where the amplitudes of vibration have considerable magnitude.—The occurrence of fossil remains of mammals in the interior of the states of Pernambuco and Alagoas, Brazil, by J. C. Branner.—The estimation of copper as cuprous sulphocyanide in the presence of tin, antimony, arsenic and bismuth, by R. G. van Name. The accurate estimation of copper in the presence of the above-named metals was found to be practicable provided that certain precautions were taken as to the amount of free acid, ammonium bisulphite and sulphocyanide used.—The composition of yttrialite, with a criticism of the formula assigned to thalenite, by W. F. Hillebrand. The empirical formula of Hidden and Mackintosh for yttrialite is confirmed. The formula proposed by Benedicks for thalenite is to be regarded as doubtful.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Astronomical Society, February 14.—Anniversary Meeting.—Dr. J. W. L. Glaisher, F.R.S., president, in the chair.—The secretaries read the annual report of the council, containing obituary notices of deceased fellows and associates, reports of the work of observatories in Great Britain and Ireland and the Colonies, and notes on the progress of astronomy during the past year.—The president announced that the council had awarded the Society's gold medal to Prof. J. C. Kapteyn, of Groningen, Holland, for his work in connection with the Cape Photographic Durchmusterung and his researches on stellar distribution and parallax. The president delivered an address, setting forth the grounds upon which the award had been made. The address dealt chiefly with Prof. Kapteyn's great work in measuring and reducing the stellar photographs taken at the Royal Observatory, Cape of Good Hope, and in preparing the catalogue, which had been completed and published, forming three volumes of the *Annals* of the Cape Observatory. The actual photographing of the plates was begun by Dr. (now Sir David) Gill in 1886 and finished in 1890. Prof. Kapteyn spontaneously undertook the great work of measurement and reduction and the formation of the catalogue—a labour which occupied him more than twelve years. The catalogue contained 454,875 stars down to about the 9·5 magnitude, from −18° to the South Pole.—The president presented the gold medal to Prof. Kapteyn.—He also presented the Jackson-Gwilt bronze medal to the Rev. Thos. D. Anderson, for his discoveries of Nova Aurigæ and Nova Persei.

Entomological Society, February 5.—The Rev. Canon Fowler, president, in the chair.—The president announced the appointment of Mr. F. D. Godman, F.R.S., Prof. E. B. Poulton, F.R.S., and Dr. D. Sharp, F.R.S., as vice-presidents for the session.—Prof. Poulton exhibited with lantern a series of slides belonging to Prof. Meldola, made from actual specimens by the three-colour process, illustrative of mimicry in British and exotic Lepidoptera and Hymenoptera. He also exhibited the several specimens from which the lantern slides had been prepared.—Mr. C. G. Barrett exhibited a series of the perfect insect of *Glottula fusca*, Hpsn., together with ears of maize (locally called mealies), showing the damage done by the well-grown larva of the species, which lives in the first place in the stem, eating the pith from the ground, and afterwards attacking the cobs, and eating from the inside into the bases of the unripe grains, which then change colour and shrivel up. He also exhibited specimens and figures to illustrate the life histories of South African Heterocera, received from Miss Frances Barrett, Buntingville, Transkei, South Africa.—Mr. W. L. Distant exhibited two specimens of Coleoptera which he received alive from the Transvaal—one *Anthia thoracica*, Thunb., now dead, the other *Brachycerus granosus*, Gyll., still living. These insects had been sent him by Mr. Robert Service, of Dumfries, who received them from Sergt. Peter Dunn, of the volunteer company of the Scottish Borderers. The genus Anthia extends to the southern Palæarctic region, and there seems little doubt that these species could be easily acclimatised there. All they require at home is the run of a good palm or orchid house.—Mr. R. Adkin exhibited a series of *Acidalia aversata*. The parent moth (a banded female, the male parent not being known) was taken at Lewisham in June, 1900. Of the resulting larvæ, about one-half fed-up rapidly and produced imagines in the autumn of the same year—a very unusual circumstance; the remainder hibernated and produced imagines in June of the following year, thus occupying the normal time in completing their metamorphoses. The proportion of individuals following the female parent in the two portions of the brood was almost equal.—Mr. G. C. Champion exhibited long series of *Leptura stragulata*, Germ., and *Strangalia pubescens*, Fabr., from the pine-forests of Aragon and Castile, showing the great variation in colour of the two species in these districts, whereas the allied forms occurring in the same places, viz. *L. rubra*, Linn., *L. distigma*, Charp., *L. unipunctata*, Fabr. and *L. sanguinolenta*, Linn., were perfectly constant; also *Dermestes aurichalceus*, Küst., which he and Dr. Chapman had found everywhere in abundance in the old nests of the processionary-moth (*Cnethocampa processionea*, Linn.) on the pines in these forests.—Dr. T. A. Chapman exhibited in illustration of his paper, on a new subfamily of Pyralidæ, living larvæ of *Hypotia corticalis*, Schiff, as well as preserved larvæ, pupa-cases, imagines, and prepared wings to show the neuration of that species.—Mr. Edward Meyrick communicated descriptions of new Australasian Lepidoptera.—Mr. W. F. Kirby communicated a Report on a collection of African Locustidæ, chiefly from the Transvaal, made by Mr. W. L. Distant.

Geological Society, February 5.—Mr. J. J. H. Teall, V.P.R.S., president, in the chair.—The matrix of the Suffolk Chalky Boulder-Clay, by the Rev. Edwin Hill. The author has been examining with the microscope washed residues from Boulder-Clays. He is able to group together the specimens from localities along a belt of country from Lowestoft to Bury St. Edmunds, as containing granules of Secondary clays and limestones. Other specimens contain granules which may be the same kind decomposed, others granules of other kinds; all these lie outside the belt occupied by the group, though some are very near it. The results lead to the conclusion that the materials of the matrix in the Suffolk Chalky Boulder-Clay were not brought from the east or north, but from inland, and not from so far inland as the Coalfields. Their sources therefore lie on a limited belt, bordering the Boulder-Clay area.—On the relation of certain breccias to the physical geography of their age, by Prof. T. G. Bonney, F.R.S. The author has endeavoured in this paper to collect from published accounts and his own observations the evidence which certain well-known and important beds of breccia afford as to the physical conditions prevalent when they were formed. Reasons are given for concluding that the Rothliegende (and probably the Triassic) breccias are indicative of a continental climate, due to a great extension of land or more probably the existence of a mountain-region on the west—winters with severe cold and snow, but rather hot and arid summers. The Caithness breccias are perhaps more analogous to the stone-rivers of the Falkland Islands, but they also indicate a rather low temperature; while the Flysch-breccias land us in the following dilemma, namely, that either similar temperatures existed in Switzerland, and that there was also an important highland district, of which no remnant can be found, within a short distance of the breccia-beds, or they must be the product of a range not inferior to the present Alps, which also has completely disappeared, and would be (for reasons given) very difficult to locate. But, even in the latter case, it must be admitted that a temperature if not lower, at any rate not higher than the present, prevailed in central Europe late in the Eocene period.

Zoological Society, February 4.—Prof. G. B. Howes, F.R.S., vice-president, in the chair.—Dr. Chalmers Mitchell read, on behalf of Mr. E. Degen, a paper entitled "Ecdysis, as Morphological Evidence of the original Tetradactyle Feathering of the Bird's Fore-limb, based specially on the Perennial Moult of *Gymnorhina tibicen*." The material on which the paper was based consisted of a large series of specimens of the Gymnorhina, obtained at regular intervals throughout the moulting-period, and the author had thus been able to give a very complete account of the perennial replacement of the feathers, avoiding the errors due to observations on the altered habits as produced by captivity. The author showed that the moulting of the wing-feathers took place in definite groups, and indicated a composite origin of the modern feathering.—A communication from Prof. W. Blaxland Benham contained some notes on the osteology of

the short-nosed sperm-whale (*Cogia breviceps*), based on an examination of a specimen which had been washed ashore on the coast of Otago, New Zealand. The soft parts of the same specimen had formed the subject of a paper presented to the Society by the same author in May of last year.—Two additional papers on the results of the "Skeat Expedition" to the Malay Peninsula were read. The first, by Mr. F. F. Laidlaw, gave an account of the dragon-flies (with the exception of Agrioninæ) collected, and a list of all other species that had previously been known from the Peninsula. One new genus, Climacobasis, and twelve new species were described. The second paper, by Mr. W. E. Collinge, contained an account of the collection of non-operculate land and fresh-water mollusca made by the expedition, and included descriptions of three new genera (Apoparmarion, Paraparmarion and Cryptosemelus) and eight new species, besides contributions to the anatomy of certain species. Descriptions of three species of Prisma in the British Museum collection, one of which, *P. smithi*, was new. were also included in the paper.—A communication from Mr. W. F. Kirby contained a list of twenty-three species of Orthoptera, of which specimens were contained in a collection made by Sir Harry Johnston, K.C.B., in the Uganda Protectorate.

Mathematical Society, February 14.—Dr. E. W. Hobson, F.R.S., president, in the chair.—Prof. Lamb read a paper on Boussinesq's problem. The problem is to determine the strain produced at any point of a semi-infinite elastic solid, with a plane boundary, by the application of pressure to its surface; the solution is obtained in a straightforward manner by the use of Bessel's functions.—Mr. A. Young read a paper on quantitative substitutional analysis. This paper is a continuation of a previous one, published in *Proceedings*, vol. xxxiii., in which the conditions that a function of several variables may be unaltered by particular substitutions, belonging to particular groups, were applied to the development of relations between the concomitants of quantics.—Prof. Love explained a new proof of a well-known theorem concerning zonal harmonics.—The following papers were communicated by the president:—Dr. H. F. Baker, elementary proof of a theorem for functions of several variables. The theorem is that, if an ordinary power series in any number of variables does not vanish for zero values of the variables, the inverse of the series can be expanded in a converging series; it is proved also that the range of convergence of the new series is the same as that of the original series, provided that no zero of the latter is contained in this range.—Mr. T. J. I'A. Bromwich, note on the wave surface of a dynamical medium æolotropic in all respects. The kinetic energy of the medium is taken to be a homogeneous quadratic function of the component velocities, and the potential energy is taken to be a similar function of the components of strain and rotation; the equations of motion are deduced from the Hamiltonian principle, and the form of the general wave surface is obtained without having recourse to the methods of vector-analysis.—Prof. A. C. Dixon, on plane cubics. This note contains some further developments of the theory of corresponding points on a cubic, as given by Salmon, and the closely connected theory of three conics.—Mr. W. H. Young, (1) on the density of linear sets of points, (2) on closed sets of points defined as the limit of a sequence of sets of points. The first paper deals with the distinction between sets of points which are everywhere dense and sets which have the property that every point is a limiting point on both sides; the distinction is of great importance in the application of the theory of sets of points to questions concerning functions of real variables; illustrative examples are given. The second paper deals with the geometrical connection between a set of given rank, in a countably infinite number of closed sets, and the corresponding limiting set; the relation between the content of each set of the countably infinite number and the content of the limiting set is discussed in detail.

Royal Meteorological Society, February 19.—Mr. W. H. Dines, president, in the chair.—Mr. E. Mawley submitted his report on the phenological observations for the year 1901. He showed that as affecting vegetation the weather was chiefly remarkable for the scanty rainfall during the growing period of the year. The deficiency was not confined to any part of the British Isles, but was more keenly felt in the English counties than in either Scotland or Ireland. Wild plants came into flower very late, but not quite as late as in the previous phenological year, which was an exceptionally backward one. The swallow, cuckoo and other spring migrants were, as a rule, rather behind their usual dates in reaching these islands. The crops of wheat, barley and oats were all more or less above average in Scotland and Ireland. On the other hand, in England, although there was a fair yield of wheat, that of barley and oats was very deficient. Hay proved everywhere a small crop, and especially so in the southern districts of England. Beans, peas, turnips, swedes, mangolds and potatoes were all more or less under average in England, but either good or fairly good elsewhere. The yield of hops proved singularly abundant. Apples, pears and plums were below average, especially apples, but the small fruits, as a rule, yielded well. Taking farm and garden crops together, seldom has there been a less bountiful year.

MANCHESTER.

Literary and Philosophical Society, February 4.—Mr. Charles Bailey, president, in the chair.—Mr. J. E. King read the first part of a paper on folklore of the North American Indians, from the Jesuit relations (1611 to 1637). Without attempting to give any complete account of Indian culture, the paper described and illustrated particular practices observed by the Jesuits. The savages believed in two main sources of disease, viz., desires in the mind of the patient, or evil practices of an enemy working by witchcraft. The sorcerers, or medicine men, claimed to cure disease and also to produce it, when desired, by practices which come under the head of sympathetic magic. Great importance was attached by the Indians to dreams, singing, dancing and feasting. Wherever these practices had a magical meaning, they were forbidden by the Jesuits to their converts.—The animistic theory of nature is illustrated by the observances with regard to the bones of animals eaten at feasts, the treatment of fishing nets, and offerings to dangerous rocks and rapids. The life of the human soul after death was a shadow of the life on earth. The ghost of the dead was driven from the abode of the living, and the name of the dead was not to be mentioned.—Mr. W. E. Hoyle exhibited two carved wooden bowls from British Columbia, and referred to the skill shown by the Indians in retaining in their carvings the special characteristics of the various animals represented, illustrating his remarks by a series of lantern slides.—Mr. Francis Nicholson drew attention to a paragraph in Mr. Elijah Helm's "Chapters in the History of the Manchester Chamber of Commerce," wherein it is stated that as early as the first half of the seventeenth century cotton was brought from Cyprus and Smyrna to London and thence to Lancashire, where it was spun by hand on the single spindle frame. Mr. Nicholson pointed out that most of the cotton used in Lancashire at that time probably came from the West Indies, and, as confirming this, he read a letter written from London by his great-grandfather, Robert Nicholson, to his brother, James, in Liverpool in 1749, where he quotes: "Jamaica cotton is sold at 16*d.* per lb., some of the very choicest 16¼*d.* per lb., Leeward Islands 14*d.* per lb."

CAMBRIDGE.

Philosophical Society, February 3.—Prof. Macalister, president, in the chair.—Oxidation in presence of iron, by Mr. H. J. H. Fenton. The remarkable influence which is exerted by traces of iron in determining and regulating the oxidation of various organic substances was first observed by the author about twenty years ago, and the observation has since opened up a very wide and fruitful field for investigation. The work is still being extended in several directions, and in the present communication a brief summary is given of the principal researches on the subject already published, and of new results which have recently been obtained. The conditions of this oxidation-method show some very close analogies with certain natural processes, and many experiments are in progress with a view of throwing further light upon the function of the iron.—Decomposition of hydrogen peroxide by light, by Mr. R. F. D'Arcy. The author gave an account of experiments showing:—(*a*) That dilute solutions of hydrogen peroxide are rapidly affected by exposure to sunshine. Experiments were chiefly made with aqueous solutions containing 4 per cent. of "20 vol." H_2O_2. Exposure of such a solution in a flask to the sunshine of five days in June resulted in the decomposition of about three-quarters of the hydrogen peroxide. In open dishes it is more rapidly decomposed, and the effect in this case is not dependent, at any rate to any considerable extent, on the evaporation taking place simultaneously. The effect is not a temperature effect. This property of hydrogen peroxide may possibly be of some importance in some of its reactions. (*b*)

That the surface of a solution of hydrogen peroxide undergoing this decomposition is capable of discharging negative electrification. (*c*) That days on which sunlight decomposes hydrogen peroxide most rapidly are the days on which the discharging action is most pronounced. The author draws from these experiments the conclusion that the decomposition of hydrogen peroxide by light is a possible source of production of positive and negative ions in the atmosphere. A detailed account is to be found in the *Phil. Mag.*, January.—Note on a method for determining the concentration of hydrogen ions in solution, by Mr. H. O. Jones and Mr. O. W. Richardson. The investigation described was suggested by a series of observations by Mr. Fenton and one of the authors. They showed that oxalacetic hydrazone decomposed in presence of water at 100° C. into pyruvic hydrazone and carbon dioxide; but that in the presence of hydrogen ions in sufficient concentration the products were pyrazolone carboxylic acid and water. It was suggested that these reactions might be explained by supposing that the negative ion lost carbon dioxide on heating; whereas the undissociated molecule lost water. Hence the presence of hydrogen ions by diminishing the concentration of the negative ion would diminish the amount of carbon dioxide produced. The experiments here described were undertaken with the view of testing quantitatively the validity of the above hypothesis and the value of the method for determining the concentration of the hydrogen ions in a solution. The authors find that, in the case where the ionisation due to the hydrazone itself is negligible compared with that of the acid used, the experimental results agree with the theoretical conclusions.—The formation of dinitrophenoxazines, by Mr. J. C. Crocker.—When picryl chloride reacts with orthoxyamido-compounds in the presence of alkali, hydrochloric acid and nitrous acid are eliminated, and condensation takes place to a dinitrophenoxazine. Eikonogen, for instance, gave naphthodinitrophenoxazine sodium sulphonate, which consists of minute bronze plates soluble in water.—The interaction of thiocyanates, picryl chloride and alcohols, by Mr. J. C. Crocker. When picryl chloride acts on thiocyanate in absolute alcohol solution, a yellow crystalline body is obtained. It melts at 138°, contains an ethoxy-group, two picryl groups and a sulphur atom. On hydrolysis it gives picramide. Hydrochloric acid is set free in the reaction.—Oxidation of glucosone to trioxybutyric acid, by Mr. R. S. Morrell. Glucosone, prepared from glucose by the action of hydrogen peroxide in the presence of ferrous sulphate, on oxidation with bromine in aqueous solution yielded trioxybutyric acid. The identity of the trioxybutyric acid was established by comparing its calcium and lead salts with those obtained from the trioxybutyric acid which is formed when erythrite is oxidised by nitric acid, also by the reduction of the calcium salt by hydriodic acid and phosphorus to normal butyric acid.—Note on the reduction of a ternary quantic to a symmetrical determinant, by Dr. A. C. Dixon.

EDINBURGH.

Royal Society, January 20.—Lord Kelvin in the chair.—Lord Kelvin, in a paper on the specification of stress and strain in the mathematical theory of elasticity, showed how a perfectly symmetrical system applicable to all kinds of strains and not merely to very small strains could be developed by considering the elongations of the edges of a tetrahedron and the related stresses (see *Phil. Mag.* for January, 1902). The method for bringing this system into relation with the ordinary system for infinitesimal strains was indicated, and the discussion was greatly facilitated by the use of models.—Dr. W. Brodie Brodie read a paper on the condition of the iron in the spleen, and detailed some of the results of an investigation into the histological and chemical position of the iron in this organ. By the use of microchemical methods, the metal was found contained in cells and also in bodies not of a cellular nature. Three varieties of iron-containing elements were described as belonging to the latter class. Three proteid bodies containing iron which had been obtained by means of purely chemical methods were also described.—Lord Kelvin communicated a paper on the molecular dynamics of a crystal, discussing in particular (*a*) stable and unstable homogeneous assemblages, (*b*) deviation from homogeneousness in surface layers, (*c*) tensile strength, (*d*) cleavage. The whole discussion was based upon the Boscovich view that the action between neighbouring atoms is attractive or repulsive according to their distance apart. The forces acting upon a given atom will depend, not only upon the nearest neighbours, but also upon those at greater distances. Taking simple configurations, Lord Kelvin showed how during the condensation of an assemblage of atoms configurations of instability might arise, and how the group originally monatomic might either assume a new stable configuration of different density or break up into a diatomic configuration of greater stability. By a process of successive approximations, the final positions of the end particles of a one-dimensional row of particles acting on one another, according to an assumed Boscovichian law, were calculated. Reckoning from the end, the distances between the successive pairs of contiguous particles were alternately greater and less than the ultimately constant distance to which they converged as we passed further and further from the end. After the first nine or ten particles, the arrangement became uniform.—A communication by Dr. Thomas Muir, on the theory of Jacobians in the historical order of development up to 1841, was also received.

PARIS.

Academy of Sciences, February 17.—M. Bouquet de la Grye in the chair.—A study of the conditions to be realised in the execution of negatives in order to obtain homogeneity and the maximum of exactitude in the determination of the coordinates of stellar images. Formulæ for evaluating the influence of the whole of the causes of error which affect the results, by M. Lœwy. The rectilinear coordinates of photographic stellar images are liable to two distinct classes of errors, the first being due to the unequal sensibility of the gelatine layer and to the irregular deformations which it undergoes during development, and the second having its origin in the subsequent measuring operations. A careful analysis of the relative magnitudes of these two causes of error in the case of stars of different orders of magnitude is given and a formula worked out for the probable error, from which it is hoped that a still higher accuracy may yet be obtained by the photographic method.—An apparatus for measuring differences of longitude with the aid of photography, by M. G. Lippmann. The essential part of the apparatus consists of a transparent mirror inclined at an angle to a mercury bath, and has already been described as a means of measuring photographically small zenithal distances. It is equally applicable to the measurement of small differences of longitude.—The action of potassium hydride on ethyl iodide and methyl chloride New methods of preparation of ethane and methane, by M. Henri Moissan. Potassium hydride heated in a sealed tube with ethyl iodide at about 200° forms ethane and potassium hydride. The reaction is not complete, but is perfectly free from bye-products. The ethane is separated from the hydrogen by means of liquid air, and from the ethyl iodide in excess by fractional distillation and subsequent washing with alcohol and water. The gas was proved by analysis to be perfectly pure. The reaction with methyl chloride is analogous, pure methane being produced.—Study of the vineyards of high yield in central France, by M. A. Müntz. It is shown to be more advantageous to moderate production in order to obtain a superior wine than to exaggerate the yield by methods giving enormous quantities of wine of feeble quality.—The estimation of sugars in the blood, by MM. R. Lépine and Boulud. A comparison of the polarimetric and copper reduction methods.—The mechanical action of gelatine on solid substances and particularly on glass, by M. L. Cailletet. Gelatine on drying exercises a very energetic mechanical action on the surfaces to which it adheres. On surfaces of glass, polished marble, Iceland spar and fluorspar, pieces are broken off, and a cylindrical tube of thin glass may be broken by means of the action of a small quantity of drying glue.—M. Charles André was elected a correspondant for the section of astronomy in the place of the late Dr. Gould.—Perturbations of the major axis of small planets, by M. Jean Mascart.—On quasi-entire functions, by M. Edmond Maillet.—On a class of partial differential equations integrable by successive approximations, by M. R. d'Adhémar.—On some transformations of contact, by M. W. de Tannenberg.—On a form of electric thermometer, by M. Georges Meslin. In certain cases the rapidity with which thermocouples follow the temperature changes of the medium in which they are placed is disadvantageous. The author therefore proposes to use the variation of electromotive force of a Latimer Clark cell with temperature as a thermometer, the thermal lag of which is very pronounced compared with a thermocouple.—Researches on ionised gases, by M. P. Langevin. A development of the theory of ionised gases of J. J. Thomson, together with an experimental confirmation of the theoretical deductions.—On the transparency of liquid conductors for the

Hertzian oscillations, by M. Charles Nordmann. The transparencies for the waves vary in the same sense as their resistances, increasing less rapidly than a direct proportion, but more rapidly than in proportion to their square roots.—The conductivity of liquid dielectrics under the influence of the radium and Röntgen rays, by M. P. Curie. Under the action of the radium rays there is a marked increase of electrical conductivity in liquid dielectrics, and on replacing the radium rays with the Röntgen rays, effects of a similar order are observed. The magnitude of the increase of conductivity observed under the action of the rays varies greatly with the liquid used, from 20×10^{-14} mhos per c.c. in the case of carbon bisulphide to $1{\cdot}3 \times 10^{-14}$ mhos per c.c. for liquid air.—Molecular fields of force, by M. S. Leduc.—A second quarter of meteorological observations at Quito, by M. F. Gonnessiat.—On praseodidymium chloride, by M. Camille Matignon. The anhydrous chloride can be obtained from the crystallised $PrCl_3,7H_2O$ by heating in a current of hydrogen chloride at 185° C. Thermochemical data are given for the heats of solution of the various hydrated chlorides.—On the diapedesis of leucocytes charged with lecithin, and on the absorption of the lecithin by the vascular endothelium, by MM. H. Stassano and F. Billon.—Comparison of the egg-laying capacity of fowls fed on meat and on grain, by M. Frédéric Houssay. It was found that on a meat diet there was a marked increase both in the number of eggs produced and also in the average weight of the egg obtained.—On the evolution of stolonial formations in Syllidians, by M. G. Pruvot.—On two caoutchouc-bearing plants of Indo-China, by M. Gustave Quintaret.—On the origin and the differentiation of the vascular meristem of the petiole, by M. Bouygues.—New observations on the *Tanghin du Ménabé* (*Menabea venenata*) and on its toxic and medicinal root, by M. Edouard Heckel.—On the properties of the reflection fringes of silvered plates, by M. Maurice Hsmy.

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 27.

ROYAL SOCIETY, at 4.30.—Note on the Discovery of a New Trypanosoma: Lieut.-Colonel David Bruce, R.A.M.C., F.R.S.—The Bakerian Lecture will be delivered by Lord Rayleigh, F.R.S., on the Law of the Pressure of Gases.

SOCIETY OF ARTS at 4.30.—The Industrial Development of India: Nilkanth B. Wagle.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Electric Shock and Legislation thereon: Major-General C. E. Webber, C.B., R.E.—Electric Shocks: F. B. Aspinall.—Electric Shocks at 500 volts (illustrated by a Demonstration of 500 volts): A. P. Trotter.

FRIDAY, FEBRUARY 28.

ROYAL INSTITUTION, at 9.—Gold Mining in Klondyke: Prof. H. A Miers, F.R.S.

PHYSICAL SOCIETY, at 5.—(1) On Focal Lines and Anchor-ring Wave-fronts: (2) Contributions to the Theory of the Resolving Power of Objectives: Prof. J. D. Everett, F.R.S.—The Absorption, Dispersion, and Surface-colour of Selenium: Prof. R. W. Wood.

INSTITUTION OF CIVIL ENGINEERS, at 8.—Indicating High-Speed Steam-Engines: A. M. Arter.

SATURDAY, MARCH 1.

ROYAL INSTITUTION, at 3.—Some Electrical Developments: Lord Rayleigh, F.R.S.

MONDAY, MARCH 3.

SOCIETY OF ARTS, at 8.—Photography applied to Illustration and Printing J. D. Geddes.

VICTORIA INSTITUTE, at 4.30.—The Physical History of the New Zealand Fjords: J. Malcolm Maclaren.

TUESDAY, MARCH 4.

ROYAL INSTITUTION, at 3.—The Temperature of the Atmosphere: its Changes and their Causes: W. N. Shaw, F.R.S.

SOCIETY OF ARTS, at 8.—Structural Colour Decoration of the Interior of Public Buildings: G. C. Horsley.

ZOOLOGICAL SOCIETY, at 8.30.—Exhibition of Photographs of Animal-life in the Egyptian Soudan: E. N. Buxton.—On the Origin of Pearls: Dr. H. Lyster Jameson.—On the Organ of Jacobson in the Elephant-Shrew (Macroscelides): Dr. R. Broom.

INSTITUTION OF CIVIL ENGINEERS, at 8.—*Paper to be further discussed*: Electrical Traction on Railways: W. M. Mordey and B. M. Jenkin.

WEDNESDAY, MARCH 5.

SOCIETY OF ARTS, at 8.—Sound Signals: E. Price Edwards.

ENTOMOLOGICAL SOCIETY, at 8.—On Mr. Guy A. K. Marshall's Five Years' Experiments and Observations in Mimicry and Warning Colours in South African Insects: Prof. Edward B. Poulton, F.R.S., with an Appendix by W. L. Distant and Colonel C. T. Bingham.—Notes on some Cases of Sexual Dimorphism in Butterflies; with an Account of Experiments made by Mr. Guy A. K. Marshall: Dr. Frederick A. Dixey.—A Monograph of the Genus Acrida, with Notes of some Allied Genera, and Descriptions of New Species: Malcolm Burr.—(*a*) Notes on Hawaian Wasps, with Descriptions of New Species; (*b*) Four New Species and a New Genus of Parasitic Hymenoptera (Ichneumonidæ) from the Hawaian Islands; (*c*) On the Generic Characters of Hawaian Crabronidæ; Four New Genera Characterised: R. C. L. Perkins.

SOCIETY OF PUBLIC ANALYSTS, at 8.

THURSDAY, MARCH 6.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: On the Spark Discharge from Metallic Poles in Water: Sir Norman Lockyer, F.R.S.—Experimental Researches on Drawn Steel. Part I. The Influence of Changes of Temperature on Magnetism. Part II. Resistivity, Elasticity and Density, and the Temperature Coefficients of Resistivity and Elasticity: J. R. Ashworth.—On the Effects of Magnetisation on the Electric Conductivity of Iron and Nickel: G. Barlow.—The Differential Equations of Fresnel's Polarisation-vector, with an Extension to the Case of Active Media: J. Walker.

LINNEAN SOCIETY, at 8.—On some New Species of Lepadidæ in the British Museum (Nat. Hist.): Prof. A. Gruvel.—On the Morphology of the Brain in the Mammalia, with Special Reference to the Lemurs, Recent and Extinct: Dr. G. Elliot Smith.

RÖNTGEN SOCIETY, at 8.30.—Localisation; with Demonstration of a Simple Direct Reading Apparatus: Dr. Barry Blacker.

CHEMICAL SOCIETY, at 8.—The Slow Oxidation of Methane at Low Temperatures: W. A. Bone and R. V. Wheeler.—Isomeric Additive Compounds of Dibenzyl Ketone and Deoxybenzoin with Benzal-*p*-toludine, *m*-Nitrobenzalaniline and Benzal-*m*-nitraniline, Part III.: F. E. Francis.—Mesoxalic Semi-Aldehyde: H. J. H. Fenton and J. H. Ryffel.—*m*-Nitrobenzoylcamphor: M. O. Forster and F. M. G. Micklethwait.—Picrimidothiocarbonic Esters: J. C. Crocker.

FRIDAY, MARCH 7.

ROYAL INSTITUTION, at 9.—Radio-active Bodies: Prof. H. Becquerel.

GEOLOGISTS' ASSOCIATION, at 8.—The Zones of the White Chalk of the English Coast. III. Devonshire: Dr. A. W. Rowe.

SATURDAY, MARCH 8.

ROYAL INSTITUTION, at 3.—Some Electrical Developments: Lord Rayleigh, F.R.S.

CONTENTS.

	PAGE
British Geography	385
The Book of the Dead	387
Fossil Fishes in the British Museum. By G. A. B.	388
Our Book Shelf:—	
Grace: "Tales of a Dying Race"	389
Liebmann: "Lehrbuch der Differentialgleichungen."—M.	389
Burnside and Panton: "The Theory of Equations: with an Introduction to the Theory of Binary Algebraic Forms"	390
Letters to the Editor:—	
Note on Electric Charging and Discharging at a Distance.—Hertha Ayrton	390
The Origin of the Scale of Fahrenheit's Thermometer.—Gilbert S. Ram	390
The Inheritance of Mental Characters.—Prof. Karl Pearson, F.R.S.	391
The Colours of Wings in Butterflies.—W. B. Croft	391
Birds attacking Butterflies and Moths.—Lilian J. Veley; John Hartley Durrant	392
The Severn Bore.—E. W. Prevost	392
Beautiful Birds.—Edmund Selous; F. E. B.	392
King Og's Bed.—Rev. O. Fisher	392
The Royal Society and the Proposed Academy	393
Position and Promise of Wireless Telegraphy. By M. S.	394
Prof. I. V. Mushketoff. By P. K.	395
Notes	395
Our Astronomical Column:—	
Astronomical Occurrences in March	400
Observations of 900 Double and Multiple Stars	400
Observations of 194 Double Stars	400
Radio-Activity and the Electron Theory. (*Illustrated.*) By Sir William Crookes, F.R.S.	400
The Milroy Lectures on Typhoid Fever	403
Vessels with Turbine Machinery	403
Mechanical Ventilators for Mines	404
University and Educational Intelligence	404
Scientific Serial	404
Societies and Academies	405
Diary of Societies	408