

of the council of the association for the year 1908-9. From this report we note that the association has applied to the Royal Commission on University and Higher Education in London to be allowed to lay its views on the subject before the commission, in the belief that the work of the commission will deal to a considerable extent with the polytechnics and technical schools of London. We also gather from an editorial note that the association, while anxious to secure coordination of the work of the polytechnics, looks on the scheme which has been put forward by the Education Committee of the London County Council as a curtailment of the powers of these institutions to do work of a university character, and is therefore opposed to the scheme. The association has also drawn up a scale of salaries for teachers in technical institutions in order to counteract the present tendency towards lower salaries. They propose that salaries of assistants begin at 150*l.* and go to 250*l.*, or 350*l.* for chief assistants in London polytechnics, and that heads of departments in the larger institutions have salaries from 350*l.* to 500*l.* per annum.

At the meeting on November 24 of the Education Committee of the London County Council an important application from the Imperial College of Science and Technology was considered. The governing body desires the Council to make a grant of 800*l.* to the college in respect of the financial year ending August 31, 1910, as compared with a grant of 500*l.* for the previous financial year. Application was also made for a special grant of 350*l.* in respect of the teaching of aeronautics. The committee decided that, without in any way committing the Council to the payment of an annual grant, and subject to twenty-five free places being reserved for the Council's scholars, 800*l.* should be allowed to the governing body of the Imperial College for the year named, that 500*l.* of the amount should be paid during the current financial year, and the remaining 300*l.* between April 1 and July 31 next. It was further agreed that the Council, in considering any future application for grant, should ask to be informed what steps had been taken by the governing body "to prevent overlapping and secure coordination of the work already carried on by university colleges, polytechnics, and other science and technological institutions, and the proper connection of the whole with the university," and also what further provision for maintenance is to be obtained from funds of a national character. The special grant for the teaching of aeronautics will not be made.

WE have received a copy of the annual report on the 113th session's work of the Glasgow and West of Scotland Technical College, adopted by the governors of the college at their meeting last September. The record of the year shows continued development in the work of the college; full advantage has been taken of the new departures enumerated in the report of last year, and these have had a satisfactory influence upon the standard as well as upon the volume of the work of the session. An important modification has been made in the general curriculum for the diploma awarded by the college, having especial reference to the examination tests to which candidates have been subjected hitherto. It has been the practice in the college to hold special sessional examinations in which it was necessary that a candidate for the diploma should show the attainment of a certain standard of proficiency. Although the examiners were in the habit of taking some note of the class-work before coming to a decision on the merits of a candidate, it was inevitable that the greatest weight should be attached to the results of these special examinations. The departure referred to consists in a re-organisation of the work for the diploma which will permit of the special being combined with the class examinations, and of a student's position each session being determined by the examiners after a review of his whole work for that, and, if need be, for the previous sessions. This review will take account of examinations, drawings, practical work as shown by laboratory books, and other class-work. Part of the work for the final year will be the preparation of a design, the composition of a thesis, or the like, done, not under examination conditions, but as nearly as possible under those which obtain in everyday professional life. It is interesting in this connection to note

that Prof. Perry, F.R.S., who was appointed by the Scotch Education Department to make the special inspection of the college for this session, does not think it possible "for the college to take its proper position until it can confer the B.Sc. degree upon all its students who pass satisfactorily through courses of study which satisfy its own council of professors." His report has been brought before the notice of the Court of the University of Glasgow, and of a committee appointed by them to consider the question of future relations with the Glasgow and West of Scotland College.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, November 12.—Dr. C. Chree, F.R.S., president, in the chair.—P. V. Bevan: The absorption spectrum of potassium vapour. The method of studying the absorption spectrum was that used first by Roscoe and Schuster, and of late years elaborated by Prof. R. W. Wood. That the optically dense vapour has small density makes it possible to heat the metal in a tube, and to have enough vapour to show strong absorption of light with little distillation to the colder parts of the tube. A tube with quartz plate ends can be used, and the absorption spectrum studied with a quartz spectrograph. The most evident feature of the spectrum obtained is the appearance of the lines of the principal series. None of the lines of the two associated series appear, but additional channelled space spectra unrepresented in the emission spectra. Fifteen new lines have been obtained in the principal series by this method. In the invisible region there appears a channelled space spectrum in the red. This shows definite edges of bands towards the violet end of the spectrum. The wave-lengths of the edges of these bands were measured. When the ratios of these wave-lengths to that of the first member of the principal series are found, the values are found to be in the same range as the corresponding ratios as deduced from Wood's measurements on sodium absorption. This the author regards as evidence of connection between the channelled space spectrum and the principal series of lines. The remarkable feature of this absorption spectrum is the difference in the properties of the principal series lines from those of other lines in the emission spectrum. Some other lines are in emission spectra far stronger than the higher members of the principal series, yet do not appear at all in the absorption spectrum. This fact may indicate that the metallic vapour at the low temperature of these experiments is in a different molecular state from its state in a spark or flame, or that in these latter cases chemical action is going on, and the emission spectrum is not a simple elementary spectrum.—J. S. Dow: Some further notes on the physiological principles underlying the flicker photometer. The author suggests that something may be learned regarding the physiological phenomena governing the flicker photometer by observing whether it is subject to certain physiological effects, such as the "yellow spot" and "Purkinje" phenomena. Experiments show that the effects referred to do occur, but are apparently much less marked. The author suggests an explanation based on the assumption that the rod-elements on the retina, in addition to the peculiarities attributed to these organs as regards the perception of light and colour, also differ from the "cones" in the fact that they seem to receive a luminous impression more slowly, and retain it longer than these organs. This peculiarity is of little consequence in an ordinary photometer of the equality of brightness type, but may play a part in the flicker instrument; it seems to explain why certain effects should be perceived more clearly in one case than in the other. According to this theory, we may imagine the flicker effect to be due to two distinct portions, received by the agency of the rods and cones respectively. Under certain conditions the speed of a flicker photometer may be supposed to be suitable for the use of "cone-flicker" but too high for the "rod-flicker," which becomes fused into a steady luminous impression, and thus does not affect the readings of the instrument. The author regards his experiments as being essentially of a suggestive character, requiring more detailed examination. One must be cautious in seeking to draw deductions from cases of colour-blindness, as many different varieties of this affliction

exist.—Dr. Edridge **Green**: Colour-perception spectrometer. This consists of an ordinary spectrometer with a single prism, fitted with two wave-length drums, which work two shutters placed in the focal plane of the eyepiece. By means of the shutters any part of the spectrum can be viewed at will, and the wave-lengths of the edges of the patch under observation can be read off from the drums. Dr. Green described how the instrument is used for testing colour-blindness, and referred to the superiority of the method over those usually adopted.—H. G. **Savidge**: Tables of the ber and bei and ker and kei functions, with further formulæ for their computation.

Mineralogical Society, November 16.—Prof. W. J. Lewis, F.R.S., president, in the chair.—J. B. **Scrivenor**: An occurrence of native copper with tin ore in the Federated Malay States. In concentrates obtained in the final washing of the tin ore from the Rotan Dahan mine in the district of Kinta, Perak, the cassiterite was found to be mixed with a reddish mineral, which could not be separated from it. This proved to be native copper in minute and beautifully sharp crystals. The tin ore is obtained from a mass of partially decomposed soft schists overlying limestone, and the copper was probably the result of reduction *in situ* of a copper salt held in solution by water percolating through the schists.—Dr. G. T. **Prior**: A meteoric stone from Simondium, Cape Colony. Two or three masses of a meteoric stone were discovered in 1907, 100 yards apart and a foot below the surface, in gravel near Simondium Station, on the Paarl to French Hoek line, in Cape Colony. The masses, of which the largest was not more than a foot in diameter, were broken up by the finders, who supposed the particles of nickel-iron seen on the fractured surfaces to be native silver. Six of these fragments, which were preserved, have been presented to the British Museum collection by Mr. R. T. Hancock and Mr. R. H. Stanley, one of the prospectors who discovered the masses. The meteorite belongs to the less common class of aërolites which show no chondritic structure; it consists of enstatite, olivine, and felspar, with nickel-iron, magnetite, and some troilite.—L. J. **Spencer**: The occurrence of alstonite and ullmannite (a species new to Britain) in a barytes-witherite vein in the New Brancepeth Colliery, near Durham. A large vein of barytes, coinciding with a fault, in the New Brancepeth Colliery is worked commercially on a large scale for barytes, and has yielded many finely crystallised mineral specimens. These include barytes and witherite in large crystals, and the rare species alstonite and ullmannite (NiSbS, with 28 per cent. of nickel), the latter of which has not been previously recorded in the British Isles. Galena, blende, copper-pyrites, iron-pyrites, and melanterite are also present in small amount. The order of formation of the non-metallic minerals is (1) barytes, (2) witherite, and (3) alstonite, the two last having been derived from the barytes. The ullmannite is found as cubes of considerable size and as octahedra, and it sometimes forms a parallel intergrowth with galena.—Prof. W. J. **Lewis**: Sartorite and other minerals from the Binnenthal. A crystal of sartorite showing twin lamellæ was described.

Royal Anthropological Institute, November 16.—Prof. W. Ridgeway, president, in the chair.—F. G. **Parsons**: The Rothwell crania. The church of Rothwell is situated in the north of Northamptonshire. About 200 years ago some workmen discovered the existence of a crypt, in which was stored a large number of human skulls and other remains. The date *circa* 1700 is the latest, therefore, to which the skulls can be assigned. As, however, at the time of their discovery all knowledge of their existence had been lost, it is safe to consider 1600 as the latest possible date for them. On the other hand, they can hardly be earlier than 1180, which is the earliest date to which can be assigned the vault in which they are stored. There are probably some five or six thousand individuals represented in the vault, and it is practically certain that, as at Hythe, the bones represent the burials of a very considerable number of years, removed at various times to the vault when the graveyard became overcrowded. It seems justifiable, therefore, to consider the bones as being the remains of English men, women, and children, most

of whom lived in the fourteenth and fifteenth centuries. It is interesting to notice that, except for a greater breadth of forehead, these Rothwell crania are almost identical with those of the students at St. Thomas's Hospital, measured by the author. On the whole, however, the Rothwell crania are slightly larger. The bones are in a very bad condition owing to the damp.

Royal Meteorological Society, November 17.—Mr. H. Mellish, president, in the chair.—C. J. P. **Cave**: Methods employed for observing pilot balloons used for investigating the currents of the upper atmosphere. Two theodolites are used, each at the end of a measured base-line, and observations of the balloon are taken each minute from its start. The readings are subsequently worked out and plotted graphically, when the height, direction, and rate of travel of the balloon during its course are determined. The best time for observing balloons is shortly before sunset, as the sky will be becoming dark when the balloon reaches its greatest height, and, being illuminated by direct sunlight, will shine like a star. The author has seen a balloon burst at a distance of forty miles under these conditions. The rate of ascent of balloons is found to vary considerably near the ground, and in cloudy weather, particularly when there is cumulus cloud, but higher up the rate of ascent remains fairly uniform up to great heights.—W. **Marriott**: Registering balloon ascents at Gloucester, June 23 and 24, 1909. During the Royal Agricultural Society's recent show the author sent up *ballons-sondes* with recording instruments on three consecutive days. Two of the meteorographs were found and returned. The balloon on June 23 fell thirty-seven miles south-east, and that on June 24 fell forty-three miles north of Gloucester. The records showed that the temperature decreased pretty uniformly up to between five and six miles; above that height the temperature increased somewhat, and then kept nearly stationary up to the highest point reached by the balloons, about twelve miles. The temperature recorded on June 23 was higher than that recorded on June 24, and the point of change, or the so-called "isothermal layer," was about half a mile lower in altitude. This was probably due to the balloon on June 23 having ascended on the eastern side of the centre of a cyclone, while that on June 24 ascended on the western side of the centre.—W. P. **Brown**: Winter temperatures on mountain heights. In 1867 the author placed a minimum thermometer on the summit of Y Glyder-fach, a mountain near Snowdon, and 3262 feet above sea-level, and this has been regularly observed and the lowest winter readings recorded each year. The author gives the readings in full.—E. **Gold**: The semi-diurnal variation of rainfall. The results of the author's investigation seem to indicate that the upward motion associated with the semi-diurnal variation of pressure is the probable cause of the semi-diurnal variation of rainfall.

Geological Society, November 17.—Prof. W. J. Sollas, F.R.S., president, in the chair.—A. R. **Andrew** and T. E. G. **Bailey**: The geology of Nyasaland. E. A. N. **Arber**: Description of the fossil flora. R. B. **Newton**: Notes on the non-marine fossil Mollusca. Dr. R. H. **Traquair**, F.R.S.: Description of the fish-scales of Colobodus, &c. The greater part of Nyasaland consists of crystalline rocks, which comprise:—(a) metamorphosed sedimentary beds, including graphitic gneisses with limestones, and muscovite-schists; (b) foliated igneous rocks, especially augen-gneiss; (c) plutonic intrusions, usually granite or syenite, more rarely gabbro. In the N.W. corner of Nyasaland is an altered sedimentary series, which forms the Mafingi Hills. It consists of accumulations of quartzites, grits, and sandstones of pre-Karoo age. The Karoo system is represented both in the north and in the south of Nyasaland; in the north it occurs in patches. It has afforded remains of fresh-water lamellibranchs (*Palæomutela*), fish-scales (*Colobodus*), and species of *Glossopteris*. Recent lacustrine marls and sands are found at great heights above the present level of the lake, and as much as fifteen miles away from its margin. Pumiceous tuffs are found in the north of the country; across the border, in German East Africa, Tertiary and recent lavas and tuffs are distributed widely. Nyasaland consists of high plateaux rising irregularly one above the other.—S. **Smith**: The

faunal succession of the Upper Bernician. The Bernician series forms the upper division of the Lower Carboniferous sequence of Northumberland. Below the Bernician lie the Tuedian beds. The Northumberland succession, together with the Lower Carboniferous rocks north of the Tweed, occupies the northern extremity of the Pennine province of the Carboniferous Limestone series. The Carboniferous strata in Northumberland encircle the Cheviots on the south, east, and north, and dip from the volcanic inlier. The Bernician is mainly built up of sandstones and shales, but intercalated are beds of limestone and numerous seams of coal. In the Upper Bernician the limestones are fairly thick, constant, and truly marine. The calcareous beds of Lower Bernician age are thin, impure, and frequently contain Stigmariæ. There are a few good marine limestones of local occurrence. The Upper Bernician answers to Tate's calcareous group, while the Lower Bernician is equivalent to Tate's carbonaceous group. It is with the Upper Bernician only that the present paper is concerned. The whole of the Upper Bernician Limestones belong to the Dibunophyllum zone, but they are capable of palæontological subdivision, as is given in the paper.—M. K. Heslop and Dr. J. A. Smythe: Notes on the dyke at Crookdene (Northumberland), and its relations to the Collywell, Morpeth, and Tynemouth dykes. The dyke at Crookdene is exposed in the bed and banks of the Wansbeck above Morpeth. It is intruded along a fault-fissure in beds of Bernician age. The basalt contains narrow lath-shaped feldspars and curved augites. Large inclusions of a feldspar, closely allied to anorthite, occur. The exterior of the inclusions in contact with the ground-mass is zoned; the individual crystals are intergrown, cracked, faulted, and in places shattered. These phenomena point to a plutonic origin of the feldspathic inclusions, and connect them with the porphyritic feldspars of the Tynemouth Dyke, for which a similar origin has been suggested by Dr. Teall. The dyke, which comes to a head in the coast-section at Collywell, shows the same peculiarities. The two basalts are practically identical. It appears probable that they belong to the same intrusion. The work of Dr. Teall has been amplified by further observations. The resemblances among the four dykes are so strong as to render it probable that they are derived from a common source.

Royal Microscopical Society, November 17.—Mr. F. J. Cheshire, vice-president, in the chair.—E. Heron-Allen and A. Earland: The recent and fossil Foraminifera of the shore-sands of Selsey Bill, Sussex, part iv. This paper covered the genera *Cycloloculina* to *Nummulites* inclusive, and included many rare and interesting forms, but no new species. Of the genus *Cycloloculina*, first described by the authors in 1908 from this locality, a few additional details were mentioned, but the original source of the specimens still remains doubtful, although its distribution has now been worked out over an extensive area of the peninsula. The evidence, however, points to the Eocene beds of Bracklesham Bay as the source from which the specimens were derived, although none have been found *in situ*. The paper was illustrated by a series of lantern slides, photographed from specimens specially mounted for the purpose.

Linnean Society, November 18.—Dr. D. H. Scott, F.R.S., in the chair.—W. Wesché: A new Tipulid subfamily. The flies which form this well-marked subfamily were brought to the author's notice by Lieut.-Colonel Winne Sampson, who collected them in S. Nigeria. The striking proboscis, more like the mouth-parts of the Culicidæ than of the Tipulidæ, marks them off from all other genera of the latter family, except *Geranomyia*; but though *Geranomyia* has greatly developed mouth-parts, they are quite different in type, the paraglossæ being cleft, and the palpi, though single-jointed, being situated at the base of the labium instead of at the tip, as is the case in the Ceratophilinæ. Colonel Winne Sampson's specimens were all mounted as preparations for the microscope, but the author found five pinned, unnamed insects in the British Museum which had been collected by Dr. Graham in Ashanti, and which agreed with the Nigerian species as regards the trophi and peculiar antennæ, but presented generic differences in the wing venation. This genus he has called *Neoceratophilus*, as the venation is less archaic in type than that of the other

genus, which the author names *Ceratophilus*, or horned or palped lip.—J. M. Brown: Fresh-water rhizopods from the Lake District. The author stated that between forty and fifty species had been obtained from Sphagnum and sediment from tarns and lakes, amongst them some which had not been previously recorded as occurring in Britain, with one species new to science. After enumerating the forms found at certain localities, the author gives some critical remarks on some of the species obtained.

Zoological Society, November 23.—Dr. A. Smith Woodward, F.R.S., vice-president, in the chair.—G. C. Shortridge: An account of the geographical distribution of the Marsupials and Monotremes of South-west Australia, having special reference to the specimens collected during the Balston Expedition of 1904-7.—Mrs. E. W. Sexton: Notes on some Amphipoda from the north side of the Bay of Biscay. The paper contained notes on the development of the females of certain Amphipoda, showing that structural modification continues even after sexual maturity is reached, and this may give rise to differences of so striking a character that earlier and later stages might easily be mistaken for distinct species. This was illustrated by examples from the families Pleustidæ and Eusiridæ.—Lieut.-Colonel J. M. Fawcett: Aberrations in *Nymphalinae* from the Andaman Islands, and of *Papilio clytia* from Burma.—R. Lydekker: Note on the cetacean *Sotalia borneënsis*. A correction of the author's description of this species published in the society's Proceedings for 1901 (p. 88, pl. viii.).

DUBLIN.

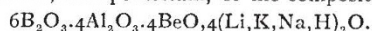
Royal Dublin Society, November 23.—Prof. H. H. Dixon, F.R.S., in the chair.—J. Adams and Prof. T. Johnson: Bacterial rot in the turnip and other brassicas. Three different bacterial diseases are referred to:—(1) brown rot of turnips caused by *Pseudomonas campestris*, Smith; (2) white rot of turnips caused by *Pseudomonas destructans*, Potter; (3) black rot of cabbages caused by *Bacillus oleraceae*, Harrison. The characters of each are described, and an outline of their distribution in Ireland is given. A comparison of the characters of the organisms responsible for numbers (2) and (3) is given in parallel columns, and the inference is drawn that they are the same species. Further confirmation of this conclusion is afforded by infection experiments.—Prof. Henry H. Dixon and W. R. G. Atkins: Osmotic pressure in plants and on a thermo-electric method of determining freezing points. In this paper the authors describe a thermo-electric method of cryoscopy, and arrangements by which the freezing point of small quantities of liquids (about 2.5 c.c.) may be determined with considerable accuracy to 0.01° C. The method was devised for determining the freezing points of the cell-sap of plants, and by that means to obtain the value of the osmotic pressure in the tissues. More than a hundred determinations were made, and these showed pressures in the leaves of plants ranging from 3.7 to 27 atmospheres. So far as the observations have gone, assimilation appears to be the most important external factor controlling the osmotic pressure of the leaves, which may vary widely in the same plant. Exposure to conditions favouring the fixation of carbon may cause the upper leaves to have a higher osmotic pressure than the lower, or *vice versa*. The determinations of the osmotic pressure are in most cases accompanied with determinations of the mean molecular weight of the substances giving rise to the pressure, so that some idea of the nature of these substances may be formed. The roots examined showed a lower osmotic pressure than the leaves.—Dr. J. R. Sutton: Some observations of dew at Kimberley (South Africa). This paper gives the results of some routine observations of dew. The author concludes that, contrary to the usual statements of the text-books, a clear sky is by no means essential to the formation of dew. A clear sky will, as a rule, hasten the beginning of the condensation of moisture from the air, but in the long run as much dew may be deposited when there are clouds as when there are none. When the air is very near the saturation point, the radiation of heat from the earth's surface is not much more intense under a clear sky than it is under clouds. Dew-making is not so much a function of the clearness of the sky as of the dampness of the air and the length of the night.

EDINBURGH.

Royal Society, November 22.—Sir William Turner, K.C.B., president, in the chair.—Prof. Alex. Smith and Prof. A. W. C. Menzies: A new hydrate of orthophosphoric acid. The new hydrate has the composition $10\text{H}_3\text{PO}_4 \cdot \text{H}_2\text{O}$. It was obtained in quantity by concentrating orthophosphoric acid to 96 per cent., and keeping it at 24.38° . Mechanical stirring for a few hours brought about crystallisation, the crystals being large transparent prisms similar to those of Joly's hydrate.—Dr. J. A. Gunn: The pharmacological action of harmaline. Harmaline is one of two alkaloids found in the seeds of *Peganum harmala*. These seeds have been used medicinally, especially in India, for a variety of purposes, but the nature of their pharmacological action has not been thoroughly investigated. The present investigation shows that harmaline belongs to the group of general protoplasmic poisons, and resembles quinine in its pharmacological actions.—Dr. D. Berry Hart: Mendelism and zygotic segregation in the production of anomalous sex, i., the Free-Martin. John Hunter first described the anomalous sterile twin, known as the Free-Martin, found chiefly in black cattle. The Free-Martin is a sterile animal like a heifer, the co-twin of which is a potent bull. John Hunter described three specimens, and, on naked-eye examination, stated that the sexual gland was an ovary in one, a testis in a second, and that in the third both ovary and testis were present. Spiegelberg, of Breslau, examined a Free-Martin calf the co-twin of which was a bull, and described the organs in detail, concluding that the Free-Martin was a sterile bull with very rudimentary Müllerian relics. Numan, of Utrecht, published a memoir on sterile cattle, and figured several specimens comparable with John Hunter's. Although in error in some of his conclusions, he established a most important fact, which Dr. Berry Hart had anticipated theoretically, viz. that there may be a Free-Martin with rudimentary external male genitals the co-twin of which is a potent female. This Free-Martin (Stier-Kween of the Dutch) is thus a sterile female. The conclusion arrived at in the paper was that the Free-Martin and its twin were derived from a single zygote, the potent organs being segregated in the potent twin, the non-potent in the sterile animal. Thus a male zygote gave rise to a potent bull and a sterile bull, the ordinary Free-Martin, while a female zygote gave a potent female and a sterile female. The potent and non-potent elements in each sex behave usually as a complete unit, but in black cattle they segregate in twinning. This explains the puzzling anomaly. The potent and sterile twins may thus be described as an extracted dominant and an extracted recessive respectively, and placed in F^2 of the ordinary Mendelian scheme.—Dr. Thomas Muir, F.R.S.: The theory of orthogonants in the historical order of development up to 1860.

PARIS.

Academy of Sciences, November 22.—M. Bouchard in the chair.—G. Darboux: Congruences of curves.—Yves Delage: The true causes of the supposed electrical parthenogenesis. A repetition, under more stringent conditions, of the experiments described in an earlier paper has shown that the conclusions given were not well founded. Electric charges, as such, do not produce parthenogenesis. Electrolysis produces a slight effect, solely on account of the formation of acid and alkali at the electrodes.—A. Lacroix: The existence of rhodizite in Madagascar pegmatites. This mineral is a boroaluminat of beryllium, lithium, sodium, and potassium, of the composition



—Lecoq de Boisbaudran: The band spectra of barium and aluminium.—M. Simon was elected correspondent for the section of anatomy and zoology, in the place of the late M. Bergh.—M. Borrelly: Observations of Halley's comet made at the Observatory of Marseilles with the comet finder. The positions of the comet and comparison stars are given for November 19 and 20.—J. Haag: Certain groups of families of Lamé.—S. Carrus: The integration of partial differential equations.—Marcel Riesz: Dirichlet's series and integral series.—B. Szilard: An apparatus for radio-active measurements. An instrument based on the principle of the electroscop, but in

which the gold leaf is replaced by a rigid index, a magnetised steel needle.—Georges Claude: The desiccation of air before liquefaction. A small quantity of alcohol, nearly equal to the weight of water vapour in the air, is added to the air on its way to the compressor; this does not solidify, and can be readily separated in liquid form in the course of the cooling process.—A. Dufour: Asymmetry of certain emission bands of vapours in the Zeeman phenomenon.—E. Caudrelier: The function of the capacity of the electrodes in the discharge of inductors.—MM. de Broglie and Brizard: Chemical reactions and ionisation of gases. A criticism of work of M. Rebolon on the same subject.—Jean Meunier: The conditions necessary for platinum to remain in a state of incandescence in a Bunsen burner. Experiments are detailed tending to show that the property of remaining incandescent in an air-gas mixture is not due to the platinum alone, but to minute traces of saline substances of the order of 0.001 milligram carried by the wire.—H. Dautriche: The working of safety explosives containing ammonium nitrate in presence of coal, paper, and paraffin. Coal-dust surrounding the cartridge is burnt to carbon monoxide during the explosion.—A. Guyot and A. Gry: Some new syntheses of vanillin. Mesoxalic ether and an $\alpha\beta$ -diketonic ester are condensed by chloride of zinc in glacial acetic acid, and the product converted into a vanilloyl-carboxylic acid by heating with an aqueous solution of copper acetate.—Marcel Guerbet: Some condensation products of camphor.—Henri Lecomte: Floral pedicels.—M. Marage: Studies of laryngeal vibrations.—J. Comandon: The cinematography of living micro-organisms and mobile particles with the aid of the ultra-microscope.—M. Baudran: A tuberculous endotoxine of albumose nature. The separation of the albumose from the bacilli is described in detail; it proved to exert toxic effects on guinea-pigs.—L. Bull: Researches on the flight of insects.—C. Gerber: The ferment of the Basidiomycetes.—A. Goris and M. Mascré: The existence in *Primula officinalis* of two new glucosides hydrolysable by a ferment. The glucosides are named primeverine and primulaverine; both are unacted upon by emulsin, but are hydrolysed by boiling dilute sulphuric acid.—E. L. Trouessart: A new insectivorous type (*Neotetracus sinensis*) from western China.—Jean Bousseac: The Nummulitic of the eastern Alps.

NEW SOUTH WALES.

Royal Society, August 4.—Mr. H. Deane, vice-president, in the chair.—J. H. Maiden and R. H. Cambage: Botanical, topographical, and geological notes on some routes of Allan Cunningham.

September 1.—Dr. Walter Spencer, vice-president, in the chair.—T. H. Johnston: A new genus of bird-cestodes.—S. G. Walton: A complete analysis of Sydney water.—J. H. Maiden: A plea for the study of phenological phenomena in Australia.

CAPE TOWN.

Royal Society of South Africa, October 20.—Mr. S. S. Hough, F.R.S., president, in the chair.—Dr. M. Wilson: Nutmeg poisoning. The symptoms were described and attention directed to the small number of cases recorded. As the condiment was used practically throughout the whole world, the explanation must be that a few nutmegs had gone into circulation after germination had begun and then been arrested. In support of this the author directed attention to the fir seed (*dana pitje*), which was greatly relished and largely eaten by children near Cape Town without any bad results; but when one seed which had started to germinate was eaten, the results were very serious and dangerous.—Dr. R. Broom: Observations on some specimens of South African fossil reptiles preserved in the British Museum. The following are some of the conclusions come to by the author:—All the later specimens which have been referred to Galesaurus are held to belong to a different genus and species, and must take Owen's name *Nythosaurus larvatus*. Gorgonops is held to be closely allied to Titanosuchus, and to be really a dinoccephalian. Theriognathus is believed to be very distinct from Endothiodon, and to be really a theroccephalian. Anthodon is held to include at present two entirely distinct forms. The type is a small pareiasaurian from the Permian beds of Styl-Krantz. The teeth from the

Cretaceous bed of the Bushman's River, which have hitherto been placed under Anthodon, are held to be dinosaurian, and for them the new name *Palascoscincus africanus* is proposed.—L. Péringuey and E. J. Phillips: Notes on a zoological and botanical collections from the group of islands of Tristan d'Acunha, made by Mr. J. C. Keytel, 1908-1909. The botanical specimens came from Tristan only, while a few birds were obtained from Nightingale Island; the remainder, however, was collected at Tristan itself. Mr. Keytel collected seven of the twenty species endemic to the island, as well as sixteen plants that have been introduced within the last thirty years, as no mention is made of them by Moseley, of the *Challenger* expedition; among the birds was found a cuckoo, a native of South America, *Coccyzus melanocoryphus*. Among the insects, all but one are introductions, mainly from the Cape, but also from extreme South America. The Cape crawfish, *Jasus lalandei*, occurs also at Tristan, as well as several fishes found on the Cape Colony coast.—A. W. Roberts: Absorption of light by the atmosphere. The investigation was undertaken for the purpose of obtaining a value of the coefficient of absorption for South Africa. Taking the means of all the results, Dr. Roberts obtains as the value of the coefficient of atmospheric absorption σ^{20} , which, interpreted into other terms, means that 17 per cent. of all rays that strike the atmosphere perpendicularly are absorbed by the atmosphere.—L. Péringuey: The age of Stone (Palaeolithic) in the Drakenstein Valley and the manner in which the implements were made. A large collection of implements of a huge size were exhibited. It was found possible from the material found in that valley to reconstruct the artificial working of those implements from the fractured, water-worn quartzite boulder to implements of a finish equal to the best Acheulean. The division of Chellean, Acheulean, Mousterian, cannot be adopted in South Africa, as the three typical forms were found together and in all stages of finish. The extreme antiquity of the implements shown was demonstrated by the well-nigh disintegrating sandstone of which they are made, as well as by the abraded edges of many of these palaeoliths. In fact, some that had been long exposed seem to be preserved by the patina they acquired through the exposure.

DIARY OF SOCIETIES.

THURSDAY, DECEMBER 2.

- RÖNTGEN SOCIETY, at 8.15.—Some Effects of Electrical Discharges on Photographic Plates: Prof. A. W. Porter.
 LINNEAN SOCIETY, at 8.—Nudibranchs from the Indian Ocean: Sir Chas. Eliot, K.C.M.G.—Trichoptera von Mr. Hugh Scott, auf den Seychellen gesammelt: Dr. Georg Ulmer.—Report on the Brachiopoda obtained from the Indian Ocean by the *Sealark* Expedition, 1905: Dr. W. H. Dall.—Narrative of the *Sealark* Expedition, Part III.: Prof. J. Stanley Gardiner, F.R.S., and others.
 SOCIETY OF DYERS AND COLOURISTS, at 8.—The Testing of Tanning Materials from a Dyer's Standpoint: W. P. Dreyer.—Methods of Testing Dyes for Fastness: Dr. E. Feilmann.—Some Problems in Leather Dyeing: M. C. Lamb.—The Purchase and Testing of Dyestuffs: H. P. Pearson.

FRIDAY, DECEMBER 3.

- INSTITUTION OF CIVIL ENGINEERS, at 8.—The Design of Generating Stations: G. Ingram.
 INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Resumed discussion: An Internal-combustion Pump, and other Applications of a New Principle: H. A. Humphrey.
 GEOLOGISTS' ASSOCIATION, at 8.—The Volcanic and Alpine Regions of New Zealand: A. E. Kitson.

SATURDAY, DECEMBER 4.

- ESSEX FIELD CLUB, at 6 (at Essex Museum of Natural History, Stratford).—Surface Tension and its Relation to Life at the Surface of Water: S. G. Starling and D. J. Scourfield.

MONDAY, DECEMBER 6.

- ARISTOTELIAN SOCIETY, at 8.—The Subject-matter of Psychology: G. E. Moore and G. Dawes Hicks.
 ROYAL SOCIETY OF ARTS, at 8.—Aëronautics: C. C. Turner.
 SOCIETY OF CHEMICAL INDUSTRY, at 8.—The Artificial Silk Industry: W. P. Dreyer.
 VICTORIA INSTITUTE, at 4.30.—The Ivory Islands of the Arctic Ocean: Rev. D. Gath Whitley.

TUESDAY, DECEMBER 7.

- INSTITUTION OF CIVIL ENGINEERS, at 8.—Marine Propulsion by Electric Motors: H. A. Mavor.

WEDNESDAY, DECEMBER 8.

- ROYAL SOCIETY OF ARTS, at 8.—The Destruction of Plumage Birds: J. Buckland.

THURSDAY, DECEMBER 9.

- ROYAL SOCIETY, at 4.30.—*Probable Papers*: The Hexosephosphate formed by Yeast-juice from Hexose and Phosphate: W. J. Young.—On the Presence of Hæmagglutinins, Hæmoponins, and Hæmolysins in the Blood obtained from Infectious and Non-infectious Diseases in Man (Third Report): L. S. Dudgeon and H. A. F. Wilson.—Gametogenesis of the Gall-fly *Nesoterus lenticularis* (*Spathigaster bacarum*): L. Doncaster.—Preliminary Note upon the Cell Lamination of the Cerebral Cortex of Echidna, with an Examination of the Fibres in the Cranial Nerves: Dr. E. Schuster.—Cortical Lamination and Localisation in the Brain of the Marmoset: Dr. F. W. Mott, F.R.S., Dr. E. Schuster, and Prof. W. D. Halliburton, F.R.S.—The Caudal Fin of Fishes (Preliminary Paper): R. H. Whitehouse.—Some Experiments with the Venom of *Causus rhombeatus*: H. E. Arbuckle.—On the Comparative Action of Stovaine and Cocaine as measured by their Direct Effects upon the Contractility of Isolated Muscle: Dr. V. H. Veley, F.R.S., and Dr. A. D. Waller, F.R.S.—A Critical Study of Spectral Series. Part I., The Alkalies, H and He: Prof. W. M. Hicks, F.R.S.—On the Distribution of the Röntgen Rays from a Focus Bulb: G. W. C. Kaye.—On the Nature of the Ionisation of a Molecule by an Particle: R. D. Kleeman.—Conduction of Heat through Rarefied Gases: F. Soddy and A. J. Berry.—Harmonic Tidal Constants for Certain Chinese and New Zealand Ports: T. Wright.
 MATHEMATICAL SOCIETY, at 5.30.—Exhibition of an Instrument for Solving Cubic Equations: T. H. Blakesley.—The Connection between the Theories of the Singularities of Surfaces and Double Refraction: A. B. Basset.—On the Representation of a Group of Finite Order as a Group of Linear Substitutions with Rational Coefficients: Prof. W. Burnside.—The Eliminant of the Equations of Four Quadric Surfaces: A. L. Dixon.
 INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Notes on Methods and Practice in the German Electrical Industry: L. J. Lepine and A. R. Stelling.
 ROYAL SOCIETY OF ARTS, at 4.30.—The Punjab: Sir James Wilson, K.C.S.I.

FRIDAY, DECEMBER 10.

- PHYSICAL SOCIETY, at 8.—Annual Exhibition.
 ROYAL ASTRONOMICAL SOCIETY, at 5.
 MALACOLOGICAL SOCIETY, at 8.—Note on the very young Stage of the Genus *Humphreya*: G. A. Smith.—A Further Note on the Anatomical Differences between the Genera *Cypræa* and *Trivia*: H. O. N. Shaw.—A New Mexican Genus of Pleuroceratidæ: Prof. H. A. Pilsbry.—Notes on a Collection of Terrestrial Land Shells from Angola, with Description of New Species: H. B. Preston.—Notes on the Genus *Libera*: J. H. Ponsoby.

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