tion of the medical profession, and the use of antiseptics while Lister was still unknown. How long ergot has been employed by the Zuni for the chief purpose to which it is devoted by civilised men, no one can say."

The subject of the ethnobotany of the American Indians is discussed in an elaborate report on "Iroquois Foods and Food Preparation," by Mr. F. W. Waugh, published as Memoir No. 86 by the Department of Mines, Canada. We have a full account of their agricultural methods and customs, their cooking and eating customs, and the utensils employed in gathering, preparing, and cooking food. The method of rain-making is of interest. The performer, stripped to the waist, or clad only in a breech-cloth, burns tobacco, and calls upon the Thunder Man, in return for his offering of tobacco, to provide abundant rainfall. Another curious custom is that of subjecting girls at puberty to the task of grinding a quantity of the hardest grain which can be found: if she fails to accomplish the task she is believed to be unfit for married life. Spoons used in eating are decorated with designs which are disclosed in dreams, and interpreted by the local seer. Such dream-objects presented to the sick secure recovery.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

LONDON.—Ten public lectures on "Science and the Empire: the Exploitation of Plants," arranged in co-operation with the Imperial Studies Committee, will be delivered at University College during the term which opened on Monday. The introductory lecture on January 22 will be by Prof. F. W. Oliver, and the remaining lectures are to be as follows:—Plant food and soil problems, Prof. W. B. Bottomley; Timber production in Britain, Dr. E. J. Salisbury; Cotton, Dr. W. Lawrence Balls; Tea-making, Dr. S. E. Chandler; The plant as healer, Dr. E. N. Thomas; Tropical exploitation, with especial reference to rubber, Dr. J. C. Willis; Vegetable dyes, Dr. S. M. Baker; Diseases of plants, Dr. H. C. I. Gwynne-Vaughan; Coal, Dr. Marie C. Stopes. All these lectures are open to the public without fee.

MR. JOSEPH YATES, of the Blackburn Technical School, has been appointed head of the chemistry department of the Derby Technical College.

THE sum of 20,000*l.* has been given anonymously to the Higher Institute of Medicine for Women at Petrograd for the foundation of scholarships in the name of Count Vorontzoff, who died in 1916.

A SERIES of popular lectures by Miss Edith A. Browne on "The Tropical Products and Industries of the Empire," illustrated by the collections of the Imperial Institute, began yesterday, and will be continued on Wednesdays in January, February, March, and April, at the Imperial Institute, at 3 o'clock. Admission to the lectures is free by ticket, for which application should be made to the director of the Imperial Institute, South Kensington.

AT the Guildhall Art Gallery on January 12 the Lord Mayor took the chair at the annual general meeting of the Royal Drawing Society, when the annual report was presented and speeches were made on the need for convincing educationists of the value of drawing for school work in general, but especially with reference to science teaching. A letter was read from Sir Robert Baden-Powell approving the work of the society, and stating that in the training of the junior Boy Scouts badges had been introduced for proficiency in drawing of a kind that displayed observation, memory, sense of proportion, reason, and so on. Dr. F. A. Bather showed how the society's method of making pupils draw objects from written descriptions encouraged the precise use of language and the precise interpretation of it. Few people knew how to read or write, but this method taught them how to do both, as well as to draw. Sir John Cockburn agreed that reading and writing were most difficult arts, and maintained that children should first be given such a knowledge of concrete objects as could best be gained through drawing and modelling. The same applied to arithmetic. It was absurd to teach children their weights and measures until they knew what was really meant by a quart, a bushel, or a pound. The endeavour of this society to make drawing a natural mode of expression in all branches of school work certainly deserves warm encouragement.

WE have received particulars of the dedication of the Ceramic Engineering Building at the University of Illinois, Urbana, Ill., on December 6–7, 1916. The American idea of the meaning of the term "ceramic" is interesting in view of a recent assumption in England that "ceramic" refers only to pottery, and that the English Ceramic Society ought, therefore, to deal with nothing but pottery. This assumption is not in accord with general usage. The ceramic industries to be treated in this building cover the technology of all mineral products except ores and minerals of organic origin, and it is stated to include all kinds of clay products; plasters, mortars, cements, and concrete; all varieties of glass; enamelled metals; and refractory, insulating, and abrasive materials. The new Ceramic Engineering Building covers a ground area of 67 ft. by 189 ft.; it is a three-story structure with a basement, and, from a description in the dedicatory pamphlet, it appears to be handsomely equipped. It is said that the department of ceramic engineering is intended (1) to train engineers for the direction and control of various operations connected with ceramic industries; (2) to cultivate intimate relations with the clay-workers of the State; (3) to co-operate with the State Geological Survey in the systematic study of all the ceramic resources of the State; and (4) to prosecute research in special ceramic problems, and the more fundamental scientific problems connected with the behaviour of ceramic materials in the various processes to which they are subjected during manufacture. The staff includes Prof. E. W. Washburn as head of the department, Prof. C. W. Parmelee, Assistant Prof. R. K. Hursh, and Instructor H. C. Arnold. Addresses on the development of the various ceramic industries were given at the dedication by Messrs. S. W. Stratton, J. P. Beck, W. D. Yeates, W. W. Marr, H. J. Burt, C. Bragdon, and C. F. Binns. The ideals described in the dedicatory pamphlet are splendid, and it would be equally splendid if they were realised in the near future.

SOCIETIES AND ACADEMIES.

WASHINGTON, D.C.

National Academy of Sciences, November, 1916 (Proceedings No. 11, vol. ii.).—C. **Barus**: Path differences within which spectrum interferences are observable. The method of observing interferences in the zeroth, first, second, third, and even fourth order, successively, without essential change of the parts of the apparatus, is noteworthy. The present experiments furnish a striking example of the uniform breadth of the strip of spectrum carrying the fringes, quite apart from the dispersion of the spectrum.—C **Barus**: Non-reversed spectra of restricted coincidence. The method, apart from any practical outcome, is worth pursuing because of the data it will furnish of the width of the strip of spectrum carrying interference fringes under any given conditions.—L. J. **Henderson** and E. J.

Cohn: The equilibrium between acids and bases in sea-water. The ocean, which, because of the presence of free carbonic acid, was originally acid, and has been becoming more alkaline from the accumulation of basic material, is at present in an epoch where the growing alkalinity is checked by the *buffer* action of acids of approximately the strength of boric acid. These buffers regulate the reaction of sea-water in a manner similar to the way in which bicarbonates and phosphates regulate the reaction of blood.—H. S. **Washington**: An apparent correspondence between the chemistry of igneous magmas and of organic metabolism. The object is to direct attention to what appears to be a congruous relation of two pairs of elements in the organic world; it would appear that iron and sodium are necessary for animal metabolism, while magnesium and potassium are essential to vegetable metabolism.—W. **Trelease**: The oaks of America. A summary of a manuscript now prepared for submission to the academy for publication as one of its scientific memoirs. Three hundred and fifty-four species of oaks, of which about one-half are new, are recognised. The relations to fossil oaks are pointed out.—E. V. **Huntington**: A set of independent postulates for cyclic order. Five postulates are given for cyclic order.—R. M. **Yerkes**: A new method of studying ideational and allied forms of behaviour in man and other animals. A description of the author's method of multiple choices for the deduction of reactive tendencies and the study of their *rôle* in the attempted solution of certain types of problem. The method involves the presentation to the subject of a problem, or series of problems, the rapid and complete solution of which depends upon ideational processes — G. N. **Lewis** and T. B. **Hine**: Electrical conduction in dilute amalgams. The resistance of amalgams of lithium, sodium, and potassium is studied at constant pressure and shows extraordinary differences; the resistances at constant average atomic volume are also calculated and found to differ materially from those at constant pressure.—R. M. **Yerkes**: Ideational behaviour of monkeys and apes. The general conclusions which may be deduced are that the ape exhibits various forms of ideational behaviour, whereas the reactive tendencies of monkeys are inferior in type.—W. D. **Harkins**, R. E. **Hall**, and W. A. **Roberts**: The osmotic pressure and lowering of the freezing point of mixtures of salts with one another and with non-electrolytes in aqueous solutions. The general result obtained with mixtures already investigated is that the lowering of the freezing point of the mixture is very nearly that which would be calculated on the basis that each salt produces a lowering of the freezing point proportional to its own concentration and to the mol-number which it has when present alone in a solution of salt concentration.—H. **Blumberg**: Certain general properties of functions.—S. W. **Williston**: Sphenacodon, Marsh: a Permo-Carboniferous theromorph reptile from New Mexico. Reconstruction of a fossil reptile found in a bone bed from which some collections were made so early as thirty-eight years ago, but which seems to have been almost forgotten until recently.—L. J. **Henderson**: On volume in biology. When equilibrium has been established in a heterogeneous system (capillary and gravitational phenomena being absent) the volume of the phases is not relevant to the state of the system, but in nearly all physiological changes the regulation of volume is of great importance.

CALCUTTA.

Asiatic Society of Bengal, December 6, 1916.—Sarat Chandra **Mitra**: Secrecy and silence in North Indian agricultural ceremonies. The author discusses the taboos against speaking and the presence of outsiders which are observed throughout northern India at the times of (*a*) sowing the seeds; (*b*) threshing the harvested crops; (*c*) winnowing the threshed-out grain; (*d*) heaping up the cleaned grains; and (*e*) measuring the same. The popular explanation of the observance of this taboo against speaking is that, if any kind of talking is done while the aforesaid operations are going on, the evil spirits would come and deprive the corn of its substance and nutritive properties. The author thinks that this explanation is not plausible enough. He has, therefore, broached the theory that all supernatural beings dislike not only being recognised and spoken to, but also being seen; that the Earth-mother or the Earth-deity is one of these supernatural beings; and that, as all the aforementioned agricultural ceremonies are performed in honour of the Earth-mother, she does not wish that anybody should speak to her or profane the scene of these operations—the scene of her hallowed presence—by breaking the silence that reigns.—N. **Annandale**: Zoological results of a tour in the Far East. Batrachia and reptiles. No attempt was made to collect batrachia or reptiles indiscriminately. In the former group specimens were collected mainly with two objects: to obtain material (1) for a systematic study of the frogs, *Rana tigrina*, *R. limnocharis*, and allied forms, and (2) for the comparison and description of larval forms, more particularly of those that exhibit peculiar characters correlated with life in rapid running water. In the collection of reptiles only aquatic and amphibious species are represented. In reference to the batrachia it is shown that three species (one practically confined to India and Ceylon, one widely distributed in continental Asia east of the Bay of Bengal, and a third characteristic of the Malay subregion) have been confounded under the name *R. tigrina*. The first of these is the true *R. tigrina* of Daudin, the second must be known as *R. rugulosa*, Wiegmann, and the third as *R. cancrivora*, Gravenhorst. Most of the reptiles are well-known forms, the most interesting being the lizard, *Tropidophorus sinicus*, which lives at the edge of hill-streams in Hong-Kong. —C. A. **Paiva**: Zoological results of a tour in the Far East. Aquatic Hemiptera from Tale Sap, Peninsular Siam. The paper deals with ten species (of which one is new to science) belonging to nine genera and six families. The majority of the species are very widely distributed Oriental forms, but one has hitherto been known only from Burma, one from Laos, and one from the Siamese Peninsular province of Patani. All are true fresh-water forms, except the last, which is probably estuarine. The most interesting feature of the collection is the fact that it includes specimens of a new species of the subgenus Kirkaldya (genus Microvelia), which has hitherto been known only from North America.

CAPE TOWN.

Royal Society of South Africa, October 18, 1916.—Dr. L. Péringuey, president, in the chair.—Miss A. V. **Duthie**: African Myxomycetes. In this preliminary paper an attempt has been made to compile a list of the species of Myxomycetes previously recorded from Africa in various journals and monographs, and also to record forms which have been accessible to or collected by the author.—Miss A. V. **Duthie**: Hybrid forms in the genus Satyrium, with descriptions of two new forms. The paper contains a description of two hybrids from Tulbagh, one *Satyrium erectum Xcoriifolium*, the other *S. erectum Xbicorne*. A detailed description, with illustrations, is given of the vegetative and floral structures in each form.—L. **Simons**: Ionisation of gases and the absorption of Röntgen rays. The independence of X-ray effects of molecular aggregations and the dependence only on the atoms present, together with the fact that it has

been shown that the absorption of a given wave-length in a solid varies as the fourth power of the atomic number of the solid, whilst for a gas the primary β ionisation also varies as the fourth power of the atomic number of the atom ionised, leads to the conclusion that absorption in solids (apart from scattering) is due throughout to the production of β particles. Expressions are found for the fall in the constant of proportion between the absorption per atom and N^4 when a K line ceases to be excited, and when an L line ceases to be excited.—M. **Rindl**: Note on the occurrence of daphnin in the arthrosolen. The author has determined the presence of daphnetin and glucose in *Lasiosiphon polycephalus*, a perennial shrub which flowers in August and September, known to the South African farmers as Januariebosje, and assumes that the glucoside daphnin has been present and hydrolysed in the process of extraction.

BOOKS RECEIVED.

Manual of Psychiatry. By Dr. J. Rogues de Fursac and Dr. A. J. Rosanoff. Fourth edition. Pp. xi+522. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 10*s*. 6*d*. net.

Food and Health. By Prof. H. Kinne and A. M. Cooley. Pp. vi+312. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 3*s*. net.

Theoretical Chemistry from the Standpoint of Avogadro's Rule and Thermodynamics. By Prof. W. Nernst. Revised by H. T. Tizard. Pp. xix+853. (London: Macmillan and Co., Ltd.) 15*s*. net.

Bacon's Large-Scale Map of the Salonika Battle Front. (London: G. W. Bacon and Co., Ltd.) 1*s*. net.

Tropical Agriculture. By Dr. E. V. Wilcox. Pp. xviii+373. (New York and London: D. Appleton and Co.) 10*s*. 6*d*. net.

Scheme for Maternity and Child Welfare Work. By Misses I. Macdonald and K. C. Atherton. (London: Royal Sanitary Institute.) 1*s*. net.

Functions of a Complex Variable. By T. M. MacRobert. Pp. xiv+295. (London: Macmillan and Co., Ltd.) 12*s*. net.

A Laboratory Course of Practical Electricity for Vocational Schools and Shop Classes. By M. J. Archbold. Pp. ix+211+Exp. 98. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 5*s*. net.

A Critique of the Theory of Evolution. By Prof. T. H. Morgan. Pp. x+197. (Princeton: University Press; London: Oxford University Press.) 6*s*. net.

Human Physiology. By P. G. Stiles. Pp. 405. (Philadelphia and London: W. B. Saunders Co.) 6*s*. 6*d*. net.

Farm Spies: How the Boys Investigated Field Crop Insects. By Prof. A. F. Conradi and W. A. Thomas. Pp. xi+162. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 2*s*. net.

DIARY OF SOCIETIES.

THURSDAY, JANUARY 18.

LINNEAN SOCIETY, at 5.—The Comparative Morphology of the Sorus of Ferns: Prof. F. O. Bower.

MATHEMATICAL SOCIETY, at 5.30.—Some Asymptotic Formulæ in Combinatory Analysis: G. H. Hardy and S. Ramanujan.—Singular Solutions of Ordinary Differential Equations of the First Order: M. J. M. Hill.—The Nature of a Moving Electric Charge and its Lines of Electric Force: H. Bateman.

ROYAL SOCIETY OF ARTS, at 4.30.—Between the Tigris and the Indus. The Bani-Israël: Sir T. H. Holdich.

CHEMICAL SOCIETY, at 8.—Alloys of Copper and Tin, Aluminium and Gold: Col. C. T. Heycock.

FRIDAY, JANUARY 19.

ROYAL INSTITUTION, at 5.30.—Soap Bubbles of Long Duration: Sir James Dewar.

INSTITUTION OF MECHANICAL ENGINEERS, at 6.—The Manufacture of Gauges at the L.C.C. Paddington Technical Institute: A. G. Cooke, W. J. Gow, and W. G. Tunnicliffe.

SATURDAY, JANUARY 20.

ROYAL INSTITUTION, at 3.—The Lakes and Mountains of Central Africa: A. R. Hinks.

MONDAY, JANUARY 22.

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Yunnan and the West River of China: E. C. Wilton.

ARISTOTELIAN SOCIETY, at 8.—Monism in the Light of Recent Developments in Philosophy: C. E. M. Joad.

TUESDAY, JANUARY 23.

ROYAL INSTITUTION, at 3.—The Old Brain and the New Brain, and their Meaning: Prof. C. S. Sherrington.

INSTITUTION OF CIVIL ENGINEERS, at 5.30.—The Physical Features of "Adam's Bridge," and the Currents across it, considered as affecting the Proposed Construction of a Railway connecting India with Ceylon: F. J. Waring.

WEDNESDAY, JANUARY 24.

ROYAL SOCIETY OF ARTS, at 4.30.—Relief Work in Belgium: W. A. M. Goode.

GEOLOGICAL SOCIETY, at 5.30.—Easter Island: W. Scoresby Routledge.

THURSDAY, JANUARY 25.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: The Dynamics of Revolving Fluid: Lord Rayleigh.—Spectroscopic Observations on the Active Modification of Nitrogen. V.: Hon. R. J. Strutt.—Magnetic Induction and its Reversal in Spherical Iron Shells: Profs. J. W. Nicholson and E. Wilson.—The Two-dimensional Motion of a Plane Lamina in a Resisting Medium: S. Brodetsky.

FRIDAY, JANUARY 26.

ROYAL INSTITUTION, at 5.30.—Epicurean Philosophy: Prof. G. Murray.

PHYSICAL SOCIETY, at 5.—A Clock of Precision: C. O. Bartrum.—The Effect of the Water Vapour in the Atmosphere on the Propagation of Electromagnetic Waves: Dr. F. Schwers.

SATURDAY, JANUARY 27.

ROYAL INSTITUTION, at 3.—The Lakes and Mountains of Central Africa: A. R. Hinks.

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