Professorship of Rural Economy will not be a resident one. The Professor will have to deliver twelve lectures. His stipend is 200*l.* a year.

SOCIETIES AND ACADEMIES

LONDON

Mathematical Society, November 8.—Prof. Henrici, F.R.S., president, in the chair.—The following resolution, proposed by the President and seconded by Dr. Hirst, F.R.S., was carried unanimously, viz. :—"That the secretaries be requested to communicate to Mrs. Spottiswoode the expression of our sincere sympathy and the assurance of our deep sense of the loss which science has sustained by the untimely death of Mr. Spottiswoode."—The new Council was elected for the session 1883–84, viz. : Prof. Henrici, president ; Sir J. Cockle, F.R.S., and Mr. S. Roberts, F.R.S., vice-presidents ; Mr. A. B. Kempe, F.R.S., treasurer ; Messrs. M. Jenkins and R. Tucker, honorary secretaries ; other members, Prof. Cayley, F.R.S., Messrs. E. B. Elliott, J. W. L. Glaisher, F.R.S., J. Hammond, H. Hart, Dr. Hirst, F.R.S., W. D. Niven, F.R.S., Prof. Rowe, and Messrs. R. F. Scott and J. J. Walker, F.R.S. The Rev. J. J. Mylne and Mr. F. W. Watkin were elected members. —The following papers were communicated :—Symmetric functions, and in particular on certain inverse operators in connection therewith, Capt. P. A. Macmahon.—On a certain envelope, Prof. Wolstenholme.—On certain results obtained by means of the arguments of points on a plane curve, R. A. Roberts.—Third paper on multiple Frullanian integrals, E. B. Elliott.—Note on Jacobi's transformation of elliptic functions, J. Griffiths.—Symmedians and the triplicate-ratio circle, R. Tucker.

Linnean Society, November 1.—Frank Crisp, treasurer and vice-president, in the chair.—Messrs. T. E. Gunn and A. Hutton were elected Fellows.—A donation to the Society of several interesting letters of Linnæus (1736–1769) to G. D. Ehret, F.R.S., an eminent botanical artist of the last century, was announced by the Chairman, and a unanimous vote of thanks thereupon accorded to the Misses Grover and Mr. Chas. Ehret Grover for their valuable donation.—Mr. Crisp drew attention to specimens in fluid medium of *Limnocodium sowerbii*, as illustrative of Mr. P. Squires' method of preserving delicate and other medusæ.—Mr. H. Groves showed examples of *Chara braunii* from Ashton-under-Lyne, and Mr. Arthur Bennett of *Najas marina* and *N. alagnensis* from Hickling Broad, Norfolk, all being new to the British flora.—Mr. W. Fawcett exhibited *Testacella maugei* alive, the same being obtained by J. C. Mansel Pleydell in Dorset, and supposed to be indigenous to that county.—A paper was read on the changes of the flora and fauna of New Zealand, by Dr. S. M. Curl. He referred more particularly to the district of Rangitikei and to the alterations of the aspect of the vegetation within the last forty years. He likewise records his own experiments in the cultivation of trees, shrubs, and flowering plants introduced from widely different climes, remarking that while a few fail to grow with vigour, the majority by degrees adapt themselves to the altered conditions, and many valuable economic plants thrive accordingly.—Mr. J. Starkie Gardner read a paper on *Alnus richardsoni*, a fossil fruit from the London Clay of Herne Bay. The species has been described by Bowerbank and commented on by Carruthers, Ettinghausen, and many other authors who have written upon the plants of the Tertiary formation. Originally considered as allied to *Casuarina*, Dr. R. Brown suggested its affinities to the Proteaceæ, a view afterwards upheld by Carruthers and others. Ettinghausen thereafter regarded it as a product of a Conifer (*Sequoia*), and Saporta compared the fruit to that of *Dammara*. Mr. Gardner enters fully into the structural peculiarities of the fossil fruit in question, and satisfactorily demonstrates that it belongs to the Betulaceæ under the genus *Alnus*. —Another paper by Miss G. Lister was read, viz. on the origin of the Placentas in the tribe Alsineæ of the order Caryophylleæ. This communication is based on a series of observations on the development of a number of genera and species. She concludes that the capsule in the Alsineæ is developed on essentially the same plan as that of *Lychnis*, the difference in the various genera being merely dependent upon the relative height attained by the carpels on the one hand, and by the central axis on the other. This being so, we are bound to admit that if we accept, as we do, the carpellary origin of the placentas in *Lychnis*, the placentas in the Alsineæ, from *Sagina apetala*, which most resemble *Lychnis*, to *Cerastium triviale*, which most widely differs from it, are also carpellary.

Chemical Society, November 1.—Dr. Perkin, F.R.S., president, in the chair.—The following papers were read :—On the production of hydroxylamine from nitric acid, by E. Divers. Free nitric acid yields hydroxylamine when treated with tin, zinc, cadmium, magnesium, and aluminium. In the presence of hydrochloric or sulphuric acid the quantity with tin or zinc may be considerable. Without a second acid only traces can be detected. The author also discusses the action of nitric acid upon metals and the constitution of nitrites, in which he considers the metal to be directly united with nitrogen.—On the chemistry of lacquer (*Urushi*) (part i.), by H. Yoshida. Lacquer contains a peculiar acid, Urushic acid, extracted by alcohol, some gum resembling gum arabic, water, and a peculiar diastatic body containing nitrogen. The lacquer when exposed to moist air at 20° C. dries up into a hard lustrous varnish. This hardening is brought about by the action of the diastase upon Urushic acid, the latter being converted into oxy-urushic acid.—On some compounds of phenols with amidobases, by G. Dyson. The author has prepared and investigated anilin phenate, toluidin phenate, naphthylamin phenate, anilin β naphthate, toluidin naphthate, rosanilin phenate, xylidin naphthate, rosanilin aurinate, anilin aurinate.—On the alleged decomposition of phosphorous anhydride by sunlight, by R. Cowper and V. B. Lewes. In a paper at the British Association, Southport, the Rev. A. Irving stated that phosphorous anhydride prepared by passing air over heated phosphorus is decomposed by sunlight into phosphorus and phosphoric anhydride. The authors find that phosphorous anhydride thus prepared consists of a mixture of phosphoric anhydride, phosphorous anhydride, and phosphorus.

Physical Society, November 10.—Prof. Clifton in the chair.—Dr. J. Blaikley read a paper on the velocity of sound in air, in which he described a modification of Dulong's method of measuring it by the wave-length in a pipe lengthened. Dulong did not allow for the partial tones, which are an important factor, whereas Mr. Blaikley does. By means of organ pipes of different diameters, the author has found the velocity to be about 320 metres per second. Mean result with four tubes: one of 54·1 mm. diameter, velocity = 329·73 metres per second ; one of 32·5 mm. diameter, velocity = 328·78 metres ; one of 19·5 mm. diameter, velocity = 326·9 metres ; one of 11·7 mm., velocity = 324·56 metres. The velocity diminishes as the tube is smaller in bore.—Mr. Bosanquet made a communication on the moment of a compound magnet, which he showed how to measure by the method already published by him. A compound magnet made up of eighteen small cylinders of magnetised steel placed end to end is hung in a cradle carried by a delicate bifilar suspension, and placed at right angles to the magnetic meridian. The deviation from zero produced by the magnet is noted ; then the magnet is divided into two parallel rows of nine cylinders along the cradle, and the deviation again noted. The tangent of the angle of deviation from the east and west line, multiplied by a constant, is the moment of the magnet. The author also pointed out that to define the condition of a permanent magnet it was necessary to know the difference of magnetic potential, the "resistance" of the metal, and the resistance of the external space. —Mr. W. Lant Carpenter read a paper on measurements relating to the electric resistance of the skin, and certain medical appliances. The author's experiments, made upon himself, showed that the resistance of the body amounts to thousands of ohms, but is mainly due to the condition of the epidermis. If this is dry, the resistance is high By soaking the skin in salt and water, he reduced the resistance of parts of his body from 10,300 ohms to 935 ohms after 100 minutes' soaking. He infers that a large electrode should be used in applying electricity to the body, and that the skin should be soaked for twenty-five minutes previously. Mr. Carpenter also exhibited a "chain-band" of Mr. Pulvermacher, and a small voltameter by the same inventor, in which the liberated gases force some of the water up a graduated tube as a gauge of the current. The author drew attention to the necessity of seeing that the skin should be dry in handling some electric light machines, else disagreeable shocks might result. Prof. Ayrton believed that the danger of electric lighting currents lay rather in their discontinuity than their electromotive force. The Brush currents, which have proved fatal, are more discontinuous than those of the Gramme machine, &c. Adverting to the presence of electricity in the air as influencing health, he suggested that the

influence might be studied by electrifying the air, say in a hospital ward. Mr. W. Coffin stated that statically electrifying patients had been tried at Bellevue Hospital, New York, without definite results.

PARIS

Academy of Sciences, November 5.—M. Blanchard, president, in the chair.—Funeral orations on the late M. Breguet, by M. Janssen and Admiral Cloué.—Notice by M. Daubree of the death of Mr. Lawrence Smith, Corresponding Member for the Section of Mineralogy, who died at Louisville, Kentucky, on October 12.—On lighting by electricity, by M. Th. Du Moncel.—On one of the methods proposed by M. Lœwy for determining the right ascensions of the circumpolar stars, by M. F. Gonnessiat.—Remarks on M. Boussinesq's communication respecting the equilibrium of a ring subjected to normal pressure uniformly distributed, by M. Maurice Lévy.—Note on the decomposition of a number into five squares, by M. Stieltjes.—On the probability that a given permutation of n quantities is an alternating permutation, by M. Désiré André.—On the algebraic integration of linear equations, by M. H. Poincaré.—On a family of developable surfaces generated by the intersection of a given left curve at an angle depending exclusively on the coordinates of the point of intersection, by M. Lucien Lévy.—On the potential of the inductive force due to a closed solenoid with current of varying intensity; analogy with Felici's theorem of electromagnetism, by M. Quet.—On a new non-periodical galvanometer, by M. G. Le Goarant de Tromelin.—On the electric resistance of sulphur, phosphorus, and some other more or less insulating substances, by M. G. Foussereau.—On the influence of nitrate of soda and of nitrate of potassa on the cultivation of potatoes, by M. P. P. Dehérain.—Researches on the physiological properties of maltose, by M. Em. Bourquelot.—On the external application of metallic copper as a preservative against cholera, by M. Axel Lamm.—On the comparative toxic action of metals on microbes, by M. Ch. Richet.—Note on zoogloeic tuberculosis, by MM. L. Malassez and W. Vignal.—On spermatogenesis amongst the edriophthalmous Crustaceans (genera Ligia, Idotea, Sphæroma, Gammarus, Talitrum), by M. G. Herrmann.—On internal sacculine, a fresh stage in the development of *Sacculina carcini*, by M. Yves Delage.—On the anatomical structure of the Phallusiadeæ, a family of Ascidians on the coast of Provence, by M. L. Roule.—On the intestinal cavity and sexual apparatus of *Spadella marioni*, by M. P. Gourret.—A second contribution to the history of the formation of coal, by M. B. Renault.—On a ferriferous meteorite which fell at Saint Caprais de Quinsac, Gironde, on January 28, 1883, by MM. G. Lespiault and L. Forquignon.—On the diurnal variation of the barometer at different altitudes, and on the existence of a third barometric maximum, by M. Ch. André.—Note on the periodicity of earthquakes, by M. Ch. V. Zenger.—On the employment of sulphuric acid in the treatment of animal matter infected by contagious elements, by M. Darreau.

BERLIN

Physiological Society, October 26.—In the course of his investigations into the functions of the cortex of the cerebrum, Prof. Munk had often had occasion to collect experiences on the subject of the appearance of general epileptic spasms resulting from irritation of the cortex of the cerebrum. By this means he had been enabled to confirm not only the older clinical conclusion of Mr. Jackson, that epileptic spasms always proceeded from one group of muscles, and then overtook in a perfectly definite series more distant groups, and at last the whole body, but likewise the accuracy of Herr Hitzig's observation, that in the case of more powerful or longer continued irritations of the motory parts of the cortex of the cerebrum, the contractions of the group of muscles belonging to the irritated spot ended in general epileptic spasms. An experimental epilepsy of this kind Prof. Munk could produce from any spot of the motory part (the sphere of feeling), and the groups of muscles therefore followed each other exactly in the series in which the centra were stratified beside each other in the sphere of feeling, so that first the parts situated nearest the irritated spot, and then more distant parts became affected, till at last the whole body was subjected to epileptic contractions. Sometimes the whole of the groups of muscles on one side was attacked before the other side began to be affected; frequently, however, the irritation and the epileptic attack passed over at an earlier stage from one side to the other. That the experimental epilepsy originated in the motory section of the cortex of the cerebrum seemed to Prof. Munk indubitably established by the two following facts:—Let a small piece, say the centre for the movements of the upper extremity of the right side, be excided, and let the centre of the eye-muscles be irritated till epilepsy set in, then would the spasmodic contractions propagate themselves successively to all groups of muscles with the exception of the right upper extremity, which would remain at rest throughout the epileptic attack. Let, again, the centre of the eye-muscles (a part specially suitable for such experiments) of an animal be irritated so that an epileptic attack supervened, and after a corresponding pause let the irritations be repeated in the same part with equal strength and duration, then, in the event of the spasms reaching the muscles, say of the head or neck, by suddenly removing the irritated part of the membrane the epilepsy would also be terminated. Both phenomena were explainable only on the assumption that the irritation of the motory cortex of the brain was the cause of the experimental epilepsy. The assertion was advanced by another observer, that epilepsy could be generated not only from the front section of the cerebral cortex, but likewise from the sphere of vision. This position Prof. Munk induced Herr Danilo to put to the proof, but in spite of numerous experiments no confirmation of it could be gained. Electric streams, of a force and duration such as, applied to any part of the sphere of feeling, would undoubtedly have given rise to epilepsy, were quite powerless in this respect when applied to the sphere of sight. Not till streams of much intenser force and very considerably longer duration were applied to the sphere of sight was an epileptic attack produced. In this case, too, it was obvious that the result was due to the neighbouring parts of the sphere of feeling becoming irritated through propagation of the effect or by communication. If now at the beginning of the epileptic attack the irritated part of the sphere of sight were removed, the attack would not thereby be stopped. Nor was it of any greater consequence in the way of producing an attack that by a cross cut the irritated sphere of sight was freed from its substratum, if only it retained connection with the front part of the cortex. Let, however, the sphere of sight, by means of a perpendicular sagittal cut, be separated from the sphere of feeling, then could no epileptic attack be any longer produced by irritating the former. These facts seemed to Prof. Munk to conclusively demonstrate that experimental epilepsy could be produced only by irritation of the motory parts of the cortex of the cerebrum. He laid stress, however, on the fact that his experiences and experiments referred only to "experimental" epilepsy.

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