

Societies and Academies

DUBLIN

Royal Dublin Society, Jan. 24. C. BOYLE and J. J. RYAN: Grass silage. Experiments were carried out on the ensiling of grass in a concrete pit silo and on the feeding of the resulting silage to dairy cows. The first cutting was started when the grass had almost arrived at the stage when it might have been cut for hay. The second cutting was taken when the aftermath was about 9 in. long. A portion of each sample was analysed chemically and the remainder weighed and put into the silo in a bag. This was weighed and analysed when recovered. The loss in dry matter in the sample bags amounted to 15.8 per cent. To this must be added the loss due to some of the material on the top and sides being unfit for feeding. This brings the loss in dry matter up to 18.5 per cent. Three feeding trials were carried out in which silage was used to replace (a) hay, (b) roots, (c) hay and roots. Replacement values for hay, roots, and silage, were arrived at on the basis of starch equivalents: 3.2 lb. silage = 1 lb. hay, 0.43 lb. silage = 1 lb. roots, or $2\frac{1}{2}$ stones silage = $\frac{1}{2}$ stone hay and 2 stones roots. M. J. GORMAN: Two forms of sampler used in estimating the number of plants per acre in botanical analyses of grasslands. An account was given of several sizes and shapes of sampler used by various grassland workers. The advantages of taking 1/100,000 acre as a unit were pointed out. This size would be convenient for most purposes; where necessary, simple multiples or fractions of it might be employed. G. C. BROCK: A method of preparing a filter for the 3130 mercury line. A photographic lantern plate is exposed and developed in pyro soda or thiocarbamide developer. Reddish-brown or blue films are produced, and afterwards stripped from the glass. Such filters show a maximum of transmission near 3000 Å., as in the case of sputtered silver films, but the absorption at 4000 Å. is much higher. A red-brown filter which transmits approximately the same percentage as a sputtered filter at 3130 Å., has a sharper cut-off on the visible side.

PARIS

Academy of Sciences, Jan. 30 (*C.R.*, 196, 305-376). The president announced the death of the Abbé Verschaffel, *Correspondant* for the Section of Astronomy. MARCEL BRILLOUIN: Linear partial differential equations in the plane. Domains with multiple connexion. The construction of integrals for given conditions at the boundaries. JULES DRACH: The integration by quadratures of the equation of geodesic lines. J. COSTANTIN: An attempt at a theory explaining the function of the mycorrhiza of the sugar cane. RENÉ LAGRANGE: The theorem of Poncelet. F. LEJA: A property of series of analytical functions limited on a curve. A. WEINSTEIN: The points of detachment of lines of slip. PIERRE GIRARD and CH. CHUKRI: A centrifuge without an axis of perfect stability and of high angular velocity. TCHANG TE-LOU: The measurement of the supply of heat in the cycle of an internal combustion engine with the aid of the indicator diagram. ANDRÉ EGAL: A new method of realisation of thermo-electric phenomena. The construction described and illustrated allows a large number of thermo-elements to be used in series, so

arranged that the whole set is not put out of action when individual elements are damaged. V. DOLEJŠEK and K. DRAB: The study of the discharge in an ionic bulb with the aid of a cinematographic apparatus. V. POSEJPAL: The atomic radius of carbon in the diamond. In a recent paper on the passage of the photonic rays by atoms some formulæ have been deduced, and these are now applied to the determination of the atomic radius of carbon in the diamond. The close agreement of the values thus obtained with those given by X-ray methods is regarded by the author as a confirmation of the formulæ. The measurements on which the formulæ are based have nothing to do directly with atomic structure. P. ROUARD: The variations of phase by reflection on very thin metallic films. The metal was deposited by cathode sputtering in the form of a wedge, so that at one end the reflection was from glass to air and at the other from glass to metal. For silver, the change of phase was at first a retardation which, after passing through a maximum, diminishes and then becomes an advance. C. JAUSSEAN: The evolution of the latent image. The density is not sufficient to characterise a developed image. Moreover, the number of variables intervening in the evolution of the latent image are so numerous that it is difficult for different observers to work under absolutely identical conditions. LÉON GION: The photolysis of aqueous solution of ammonia. In the absence of oxygen, hydrogen and nitrogen are evolved, the ratio H/N varying from 2.4 to 3. A reducing substance is formed which is not a nitrite. NÉDA MARINESCO: The preparation of colloids by ultra-sonic dispersion. The method allows the preparation of a number of metallic colloids at the ordinary temperature in any dispersing medium: the particles are spherical and can be kept for a long time in this state. G. DARZENS and ANDRÉ LÉVY: Improvement of the general method of preparation of aldehydes by the degradation of acids. A modification of Blaise's method giving nearly quantitative yields. V. HASENFRATZ: Some properties of *d*-xylonic lactone—URIAN. A 1,6-dimethyl-1, 3, 5-hexatriene. VOLMAR and BETZ: Contribution to the study of emetic derivatives of lactic acid. Description of the preparation and properties of sodium antimoniolactate, $(C_2H_4O_2)_2NaH(SbOH)$. JACQUES DE LAPPARENT: The mica schists of Léon. RAYMOND CIRY: The upper Cretaceous of the western part of the province of Burgos. OTTO PETTERSSON: A gap in the classical theory of tides. E. FICHOT: Remarks on the preceding communication. PAUL BERTRAND: The morphological value of the primary rachis of the Cladoxylæ and the Zygoterideæ. J. RAYMOND: The formation of the perithecium in *Microsphaera quercina*. A. GUILLIERMOND and R. GAUTHERET: The microchemical characters of the oxyflavonic compounds; their localisation in the vacuoles. The reactions of oxyflavonic compounds towards various reagents have been studied in the vacuole, in extracts and with the pure product. These are tabulated and compared with results for tannin in the vacuole and in solution. Although a single reagent has a limited value, with the tests taken together, oxyflavonic compounds can be identified and distinguished from tannin without difficulty. Mlle. S. NOUËL: Technique for the study of the eye muscles in Selacians. Mlle. ANNE RAFFY: The comparison of the respiratory metabolism of the eel at some stages of its development.

CAPE TOWN

Royal Society of South Africa, Oct. 19. S. M. NAUDÉ and J. E. C. COVENTRY: Intensity of cosmic radiation in South Africa. The results obtained in July, 1932, at eight different altitudes ranging from sea level (Cape Town) to 9,200 ft. (Mont-aux-Sources) show the usual increase of the intensity with the altitude, that is, with the fall of the barometric pressure. The graph of intensity/barometric pressure, for South Africa (mean latitude 28°S) lies between those representing Compton's determinations in New Zealand (42°S) and at a point 4°S, thus verifying the dependence of the intensity on the latitude. H. A. SHAPIRO: The kitchen-middens at Gordon's Bay. The bored-stone would seem to be a late addition to the kitchen-midden or 'strandloper' culture. Pottery would seem to be late, and is not present in all the middens. Previous to the appearance of these two elements the culture produced only formless stone instruments, shaped by their use, and without intention. The middens seem to overlie natural dunes. Two skeletons (the skulls having been removed some years before) were discovered. From Dr. D. Slome's description, these would fall within the San race.

GENEVA

Society of Physics and Natural History, Dec. 15. H. LAGOTALA: The geology of the Comba region (north of Mindouli, French Equatorial Africa). The author continues the study of this region, formed by oolitic limestones and much folded siliceous limestones. M. GYSIN: Petrographical researches in the Haut-Katanga. (1) Geological outline of the southern part of Haut-Katanga. The author gives a geological sketch of this region, which is 300 km. by 60 km. in extent. A series of geological maps (scale 1 in 20,000) have been drawn. R. WAVE: Polydromy of potentials and topology. M. JUNQUERA: The combined influence of pH and glucose on the permeability of yeast to methylene blue. The addition of glucose in acid medium increases the staining effect of methylene blue on yeasts; the increase of coloration due to the glucose changes specifically in alkaline medium.

ROME

Royal National Academy of the Lincei, Nov. 6. L. PALAZZO: Materials for the reconstruction of the magnetic maps of Italy: (4) Piedmont. U. CISOTTI: Finite rigid displacements. G. QUAGLIARIELLO: Presence in the bile of an enzyme which dehydrogenates stearic acid. Previous results have indicated that either the pancreatic juice or the bile contains a dehydrogenase capable of acting on higher fatty acids. Experiments with stearic acid show that such an enzyme occurs in the bile. R. CACCIOPOLI: A principle of inversion for functional correspondences and its applications to equations with partial derivatives (1). L. CHAMARD: (α) Points as described by Georges Durand. S. CHERUBINO: Further considerations on the classification of hyper-elliptic surfaces from the real point of view. B. FINZI: Vectorial tensors and their derivation. D. D. KOSAMBI: Differential geometry and calculus of variations. M. KOURENSKY: Integration of the equations to partial derivatives of the second order with two functions of two independent variables. (1) General case. G. PFEIFFER: (1) Simplification of L. Bianchi's investigations, generalising the character (S. Lie) that the parameters are essential. (2) Linearly independent solutions of the linear equations to the partial deriva-

tives of the second order with two independent variables. A. ROSENBLATT: The question of unicity for the solutions of equations to partial derivatives. B. SEGRE: Claim for priority. M. GLEIJSSES: Theory of 'wake' in perfect liquids; case of the circular cylinder. N. CARRARA: Corollary to the theorem of the derivation of definite functions from integrals; application to the experimental methods of measuring physical magnitudes. E. SÈGRÈ: Quadrupole lines in X-ray spectra (2). Various theoretical considerations are discussed and an interpretation is given of the new experimental material which has been acquired during the past year and supports the attribution of the forbidden lines of X-rays to the irradiation of the quadrupole. P. PRATESI: Thiocyan- and thio-pyrroles, and pyrrole disulphides. By direct thiocyanation with an alkali thiocyanate and bromine, 2:4-dimethyl-3-carbethoxy-5-thiocyanopyrrole and 2:4-dimethyl-5-carbethoxy-3-thiocyanopyrrole have been obtained from the corresponding dimethylcarbethoxypyrroles. They are highly stable, crystalline compounds and may be used for the identification of the pyrrole derivatives. When reduced with zinc and acetic acid, they give the thiopyrroles in good yields. O. RENZ: The tectonic position of the shaly clays between the mesozoic chain of Gubbio and the Tiber valley. M. MRTOLO: Avitaminosis and intoxication. (1) Experimental polyneuritis and chemical intoxication from metals and metalloids. The nutritional deficiency of pigeons affected by experimental polyneuritis is enhanced by ingestion of mixtures of salts of various metals and metalloids in doses insufficient to produce poisoning in normal animals. Moreover, the harmful effect of the salts is also increased.

VIENNA

Academy of Sciences, Nov. 17. GEORG KOLLER and GERHARD PFEIFFER: (1) The constitution of pinastric acid. This acid, occurring, together with usnic and vulpic acids, in *Cetraria pinastris* and *C. juniperina*, has the empirical formula $C_{20}H_{16}O_6$ and yields anisic and benzoic acids on oxidation. On the basis of these and other reactions, two alternative structural formulæ are suggested for pinastric acid. (2) Glabratric acid. This acid, a constituent of *Parmelia glabra*, is identical with lecanoric acid. EDUARD HASCHEK and MAX HAITINGER: A simple method of determining colour. By means of a method based on the Young-Helmholtz theory, photometric measurements under three filters give data which allow of the calculation of saturation and brightness. LEOPOLD KÖBL: The northern edge of the Tauernfenster between Mittersill and Kaprum. FRANZ GRIENGL, OSWALD KOFLER and MARIA RADDA: Experiments on the relations between turbulence-friction and constitution of liquids. MAX PESTEMER and OSCAR PLATTEN: The conductivity of binary or ternary, partially miscible liquid mixtures with one component which is at least slightly electrolytic.

Nov. 24. GUSTAV KÜRTI: Magneto-rotation in coloured glass and rock salt. With these substances, no measurable alteration in the electromagnetic rotation of the plane of polarisation occurs as the result of intense Becquerel radiation. HERBERT SCHÖBER: The spectra of rhenium: (3) the arc spectrum with copper electrodes in the visible region between 5400 and 4000 Å. ALFRED PONGRATZ and ALOIS ZINCKE: Investigations on perylene and its derivatives (39).