

## Societies and Academies.

## LONDON.

Society of Public Analysts, Oct. 3.—G. W. Monier-Williams: Polarimetric determination of sucrose in milk and sucrose mixtures. A method has been based on the work of Jackson and Gillis and on the observations of Vosburgh and of Zerban, on the effects of concentration and temperature on the specific rotation of invert sugar. Angular notation is used as being more suitable for general work than the saccharimetric notation commonly used by sugar chemists.—T. McLachlan: The analysis of starch sugar degradation products by selective fermentation. The method of selective fermentation by different yeasts is the most satisfactory. The yeasts used are *S. Froberg*, *S. Saaz*, and *S. exiguus*; the difference between the total solids of the blank and the solution fermented by *S. exiguus* gives the amount of dextrose and lævulose; the difference in total solids in the solutions fermented by *S. exiguus* and *S. Froberg* represents maltose; whilst the difference between the total solids after fermentation by *S. Froberg* and *S. Saaz* gives other fermentable sugars. The amount of dextrans is calculated from the optical rotation.—W. R. Schoeller and E. F. Waterhouse: Investigations into the analytical chemistry of tantalum, niobium, and their mineral associates. (13) A new method for the separation of zirconium and hafnium from tantalum and niobium. The process is based on the precipitation of the oxalo-earth acids by tannin in weakly acid solution, zirconyl oxalate remaining dissolved. The method described earlier of fusion of the mixed oxides with potassium carbonate, has been perfected; a single fusion may be sufficient for the separation of the bulk of the earth acids. The balance is then separated from the zirconium residue by the tannin procedure. The latter is a delicate test for the detection of the smallest quantities of earth acids in zirconia.

## SHEFFIELD.

Society of Glass Technology (Bournemouth meeting), Sept. 21.—I. Kitaigorodsky and S. Rodin: The value of the expansion factor of aluminium oxide in glass. The thermal expansion coefficient of glass depends upon its composition and rises with the increase in the percentage of alkali and lime, and falls as the content of alumina and silica increases. In calculations of the theoretical thermal expansion coefficient of glass, the value of the factor for alumina must be taken as 0.52, as previously determined by S. English and W. E. S. Turner, and not as 5.0, the value given by Winkelmann and Schott.—D. Starkie and W. E. S. Turner: A study of the ultra-violet light transmission of glass. Photographs of the light transmitted by seven commercial ultra-violet glasses were obtained. They were Corex, Vita-, Sanalux, Holvi-, Helio-, Quartz-Lite, and Uviol glasses. The percentage transmission at each point of the spectrum for these seven glasses was also determined, a platinised-quartz wedge photometer being used. Transmission curves extending from a wave-length of 7000 Å. to 2000 Å. have been drawn. The transmission of solar ultra-violet rays is roughly proportional to the iron content. The amount of ferrous iron was roughly 30 per cent of the total iron. Six glasses were exposed, under the conditions to which an ordinary window pane is subject, for 3 months, and the decrease in transmission of the solar ultra-violet rays was measured. Four specially prepared laboratory glasses containing only iron and platinum as impurities, showed no change in transmission when exposed to the sun's rays or to those from an artificial source of ultra-violet light. Measure-

ments of transmission were also made for a series of specially prepared soda-lime glasses. The parent glass was 75 per cent SiO<sub>2</sub>, 10 per cent CaO, and 15 per cent Na<sub>2</sub>O, and ferric oxide was added in increasing amounts as the series progressed. As the iron content increased, the limit of transmission in the ultra-violet moved progressively towards higher wave-lengths. Plotting iron content against wave-length limit yielded a smooth curve, from which it could be deduced that a glass perfectly free from iron and platinum would have a transmission limit of 2200 Å. approximately.

## PARIS.

Academy of Sciences, Sept. 17.—A. Lacroix: The genesis of the jadeite of Burma.—Bigourdan: The observatory of Delambre, at the rue de Paradis. Delambre made observations at this observatory in 1798 and 1799 for determining the latitude of Paris.—Georges Giraud: A method of solving the problem of Dirichlet for linear equations.—J. Chokhate: The approximation of continuous functions by the aid of polynomials or of limited trigonometric series.—D. Menchoff: The conformal representation of plane domains.—M. Winter and Paul Lévy: Vibrating spaces.—G. Delépine: The marine fauna of the Carboniferous of Asturia (Spain).—A. Guichard: The existence of fibro-vascular bundles with inverse orientation in the leaf of *Cladium Mariscus*.—Jules Amar: The question of alcohol. From a survey of experimental work on the behaviour of alcohol in man, two facts are regarded as proved. Alcohol from wine or beer, in moderate doses, is a heat-producing agent: under no conditions can muscular or nerve energy be derived from the consumption of alcohol.

## ROME.

Royal National Academy of the Lincei, May 20.—P. Burgatti: Properties of the axial homographs in a Euclidean  $S_n$  with application to Frenet's formula.—A. Bemporad: Observations made during the solar eclipse of June 29, 1927, at the Royal Capodimonte Observatory. The results obtained with two pyrheliometers of different types confirm the law of diminution of the radiating power of the solar disc in passing from the centre to the periphery, formulated by the author on the basis of observations made by Secchi, Vogel, Langley, and Frost, but fail to confirm the law deduced by Julius, which would indicate a more rapid diminution. The recent observations of Schwarzschild, Villiger, and Abbot are also in good agreement with the results obtained, which also support the author's hypothesis that the absorptive power of the atmosphere increases in the neighbourhood of the maximum phase of a solar eclipse.—Q. Majorana: A photo-electric phenomenon detected by means of the audion.—L. A. Herrera: Cellular figures in rhyolite. Specimens of rhyolites from the Contepec district of Mexico exhibit an abundance of distinct cellular figures, produced by imperfect crystallisation of the silica. Solution and other influences have modified the form of the figures which, by mutual compression, have assumed the appearance of the hexagonal structure of tissues and of imperfect mitotic figures. Silica, which is widespread in Nature, both in organisms and elsewhere, appears to be an antagonistic colloid which plays a part in modelling living and pseudo-living forms and in breaking down the barriers between the different departments of Nature.—T. Boggio: Homographs and differentials relating to a curved space. In conjunction with C. Burali-Forti, the author has given in "Espaces courbes et critique de la relativité" proofs of certain well-known properties of curved spaces. It is now shown that simpler proofs are

possible by considering the curved space itself, rather than the Euclidean space representing the curved space.—G. Colonnetti: New contribution to the theory of elastic co-actions and its technical applications.—C. Ferrari: The plane lamina and the Kutta-Joukowski law. The considerations recently advanced by the author are extended to furnish a proof of this law.—A. Signorini: The Kutta-Joukowski theorem.—Elena Freda: The formation of stationary electric currents in a conductor subjected to the action of a uniform magnetic field (2).—N. Siracusano: New contributions to the spectrum of bromine in the discharge without electrodes.—F. Rasetti: Wave mechanics of an alkaline atom in the electric field (1).—G. Malquori: (1) The system  $\text{KNO}_3 - \text{HNO}_3 - \text{H}_2\text{O}$  between  $25^\circ$  and  $60^\circ$ . The behaviour of this system at  $40^\circ$  and at  $60^\circ$  is similar to that previously observed at  $25^\circ$ , the amount of potassium nitrate passing into solution at first diminishing and then gradually increasing as the acidity is increased. The depression of the solubility of the nitrate produced by small proportions of acid is more marked at the higher temperatures, whereas the augmentation in solubility due to larger amounts of acid shows the opposite behaviour. The influence of nitric acid on the solubility of potassium nitrate cannot be regarded as an indication of the existence in solution of complex compounds diminishing in stability as the temperature rises.—(2) The system  $\text{KNO}_3 - \text{Al}(\text{NO}_3)_3 - \text{H}_2\text{O}$  at  $0^\circ$ ,  $40^\circ$ ,  $60^\circ$ . In this system the only solids in contact with the solutions are the two salts,  $\text{KNO}_3$  and  $\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$ . The amount of potassium nitrate in the solution saturated with the two salts increases slightly as the temperature is raised.—A. Ferrari and A. Baroni: The importance of the crystalline form in the formation of solid solutions (1). Thermal analysis of the anhydrous system,  $\text{LiCl} - \text{CoCl}_2$ . The solidification curve of mixtures of these two salts is continuous and exhibits a maximum corresponding with the compound  $\text{Li}_2\text{CoCl}_4$ . In the supposed solid solutions between chlorides of divalent and univalent metals, the crystallisation interval is found to be zero, and the hypothesis is advanced that this is due to the preservation of the individuality of the unit cells of the components. The melting points of ferrous and cobalt chlorides are respectively  $673^\circ$  and  $724^\circ$ .—B. Castiglioni: Circulation in the southern Adriatic. Investigation of the exchange of water between the southern part of the Adriatic and the Ionian Sea by way of the Straits of Otranto reveals the existence in the straits of two main currents flowing in opposite directions.—G. Brunelli: Cancer and impurity of races. The hypothesis here advanced to explain the causation of cancer is based on the supposition that the characters of impure races, not completely fused, give rise, especially at the age when the internal equilibrating defences of the organisation decline, to anomalies in the rhythm of growth and to differentiation of certain cellular elements; at the same time, the regulating power of growth is disturbed by the lack of chemical equilibria in the internal liquids, the antagonisms of the hereditary patrimony are exerted more violently, and an ascending curve of anomalous growth is interpolated in the regular descending growth curve at the expense of some of the cellular elements.—G. Brunelli and Lina Rizzo: Hermaphroditism in *Perca fluviatilis* L.—V. Rivera: Action of strong doses of  $\gamma$ -rays on *Bacillus tumefaciens* Smith and Townsend. Even extremely intense doses of  $\gamma$ -rays are unable to kill this pathogenic organism. So long as the exposure lasts, multiplication of the organism is prevented, and development subsequent to the irradiation is greatly retarded, but all the colonies retain their pathogenic properties.

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## Official Publications Received.

## BRITISH.

- Report for 1927 on the Lancashire Sea-Fisheries Laboratory at the University of Liverpool and the Sea-Fish Hatchery at Piel. Edited by Prof. James Johnstone. (No. 36.) Pp. 68. (Liverpool.)
- Imperial Department of Agriculture for the West Indies. Report on the Agricultural Department, St. Lucia, 1927. Pp. iv+31. (Trinidad, B.W.I.) 6s.
- Transactions of the Royal Society of Edinburgh. Vol. 16, Part 1, No. 4: *Calamoichthys calabaricus* J. A. Smith. Part 1: The Alimentary and Respiratory Systems—concluded. By G. Leslie Purser. Pp. 89-101+plates 2-4. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 2s. 6d.
- Annual Report for the Year 1927 of the South African Institute for Medical Research, Johannesburg. Pp. 88. (Johannesburg.)
- Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1150: Reports and Memoranda of the Aeronautical Research Committee published between 1st March 1927 and 30th June 1928. Pp. 8. 4d. net. No. 1162 (Ae. 326): A Summary of the Experimental and Theoretical Investigations of the Characteristics of an Autogyro. By H. Glanert and C. N. H. Lock. (T. 2597.) Pp. 5. 4d. net. (London: H.M. Stationery Office.)
- The Salt Schools, Shipley. Prospectus for the Session 1928-1929. The High Schools, Technical School and School of Art, Shipley Evening Institutes. Pp. 154+12 plates. (Shipley.)
- The Clothworkers' Departments of Textile Industries and Colour Chemistry and Dyeing in the University of Leeds. Souvenir Booklet, 1928. Pp. 27. (Leeds.)
- Proceedings of the Royal Society of Edinburgh, Session 1927-1928. Vol. 48, Part 2, No. 12: An Analysis of Preferential Voting. By D. M. Y. Sommerville. Pp. 140-160. 2s. Vol. 48, Part 2, No. 13: Studies in Clocks and Time-Keeping. No. 4: The Present-day Performance of Clocks. By Prof. R. A. Sampson. Pp. 161-166. 6d. Vol. 48, Part 2, No. 14: The X-ray Examination of Coal Sections. (Preliminary Note.) By C. Norman Kemp. Pp. 167-179+8 plates. 3s. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)
- Canada. Department of Mines: Mines Branch. Investigations of Mineral Resources and the Mining Industry, 1926. (No. 687.) Pp. ii+80+7 plates. Investigations of Fuels and Fuel Testing (Testing and Research Laboratories), 1926. (No. 689.) Pp. vi+132+7 plates. (Ottawa: F. A. Acland.)
- Memoirs of the Cotton Research Station, Trinidad. Series B: Physiology. No. 1: Studies on the Transport of Carbohydrates in the Cotton Plant; i. A Study of Diurnal Variations in the Carbohydrates of Leaf, Bark and Wood, and of the Effects of Ringing; ii. The Factors determining the Rate and the Directions of Movements of Sugars. By T. G. Mason and E. J. Maskell. Pp. 132. (London: Empire Cotton Growing Association.) 2s. 6d.

## FOREIGN.

- Smithsonian Miscellaneous Collections. Vol. 81, No. 4: Drawing by Jacques Lemoine de Morgues of Saturiua, a Timucua Chief in Florida, 1564. By David I. Bushnell, Jr. (Publication 2972.) Pp. 9. (Washington, D.C.: Smithsonian Institution.)
- International Hydrographic Bureau. Special Publication No. 23: Limits of Oceans and Seas. Pp. 24+1 map. (Monaco.) 35 cents.
- Institut scientifique de Buitenzorg: "s Lands Plantentuin." Treubia: Recueil de travaux zoologiques, hydrobiologiques et océanographiques. Vol. 10, Livraison 2-3, Août. Pp. 145-404. (Buitenzorg.) 5-00 f.
- Proceedings of the Academy of Natural Sciences of Philadelphia, Vol. 80. A. New Meteor Crater. By Daniel Moreau Barringer, Jr. Pp. 307-311. The Species of Campsomeris (Hymenoptera—Scoldidae) of the Plumipes Group inhabiting the United States, the Greater Antilles and the Bahama Islands. By J. Chester Bradley. Pp. 313-337+plate 26. (Philadelphia, Pa.)
- Smithsonian Miscellaneous Collections. Vol. 81, No. 1: Mexican Mosses collected by Brother Arsène Brouard, II. By I. Thériot. (Publication 2966.) Pp. 26. Vol. 81, No. 5: The Relations between the Smithsonian Institution and the Wright Brothers. By Charles G. Abbot. (Publication 2977.) Pp. iii+27. (Washington, D.C.: Smithsonian Institution.)
- The Memoirs of the Imperial Marine Observatory, Kobe, Japan. Vol. 3, No. 2, December 1927. Pp. 23-80. Vol. 3, No. 3, June 1928. Pp. 81-166. (Kobe.)
- The Science Reports of the Tôhoku Imperial University, Sendai, Japan. Fourth Series: Biology. Pp. 481-677+plates 24-27. (Tokyo and Sendai: Maruzen Co., Ltd.)
- Journal of the College of Agriculture, Hokkaido Imperial University, Sapporo, Japan. Vol. 19, Part 5: Notes on *Laspeyresia glycinivorella* Matsumura, the Soy Bean Pod Borer. By Satoru Kuwayama. Pp. 261-290+plate 11. (Tokyo: Maruzen Co., Ltd.)
- Institut de la Science du Feu. Les extincteurs prétendus chimiques leur inefficacité, les dangers mortels de leur emploi. Par Féliçien Michotte. Pp. 77. (Paris.) 3-50 francs.
- Department of Commerce: Bureau of Standards. Bureau of Standards Journal of Research. Vol. 1, No. 2, August. Pp. 105-295. 25 cents. Research Paper 6: Some Measurements of the Transmission of Ultra-Violet Radiation through various kinds of Fabrics. By W. W. Coblenz, R. Stair and C. W. Schoffstall. Pp. 105-124. 5 cents. Research Paper 7: Tinting Strengths of Pigments. By H. D. Bruce. Pp. 125-150. 10 cents. Research Paper 8: Wave-Length Measurements in the Arc and Spark Spectra of Hafnium. By William F. Meggers. Pp. 151-187. 15 cents. Research Paper 9: Tests of the Effect of Brackets in Reinforced Concrete Rigid Frames. By Frank E. Richart. Pp. 189-253. 25 cents. (Washington, D.C.: Government Printing Office.)
- Technical Books of 1927: a Selection. Compiled by Donald Hendry. Pp. 28. (Brooklyn, N.Y.: Pratt Institute Free Library.)
- U.S. Department of Agriculture. Farmers' Bulletin No. 1570: Mosquito Remedies and Preventives. By L. O. Howard and F. C. Bishopp. Pp. ii+13. (Washington, D.C.: Government Printing Office.) 5 cents.