

They failed in this, but their journey was the most important achievement in the south-west of what is now the United States until the beginning of the nineteenth century. From Santa Fé they went north-west, crossing the upper Rio Grande and entering the basin of the Colorado. They reached the head waters of the San Juan, its eastern tributary, crossed the plateau region between it and the upper Colorado and traced part of the course of the Rio Dolores. They visited the Yuta (Utah) Indians and arrived in the territory of the Comanche Indians after crossing the Green River. A difficult mountain traverse brought them to Utah Lake, which discharges northwards into the Great Salt Lake. This journey marks the farthest advance of the Spaniards in the interior of North America; it was not followed up, fur hunters and adventurers from the United States being the first to make their way into the region of the Great Salt Lake. Escalante's narrative gave useful information about the climate, products and peoples of the region.

#### Oct. 29, 1762.—Niebuhr in Yemen

A party of Danish scientific workers, among whom was Carsten Niebuhr, a mathematician and practical surveyor, arrived at Jidda in a pilgrim ship. There they remained for two months before they could get a barque to take them on to Yemen, and they passed the time in making observations on the country inland. The party broke up at Beit el-Fakih, and between them covered most of the Tehema southwards to Tais and Zebid and the lower mountains. They were able to travel unmolested in a country afterwards noted for its fanaticism until they reached Mokha. Three of them reached Sana in July, 1763, but they were ill, and two had died; they decided to return, two of them dying on the voyage. Niebuhr was in Arabia again in 1765. Sana, his farthest point inland, is less than a hundred miles from the Red Sea coast, and he explored but a small region. Yet the insight he showed and the careful and faithful delineation of what he saw have made his work a classic still valuable to the student and would-be traveller in the Yemen.

### Societies and Academies

#### LONDON

Society of Public Analysts, Oct. 5.—E. Hinks: Third report of the Milk Products Sub-Committee: The analysis of sweetened condensed milk in which the sucrose has altered during storage. The problem was at first thought to be one merely of determining invert sugar, but by the study of 'aged' sweetened condensed milk by various processes, a modified Barfoed process, copper reduction processes, and in particular a combination of the polarimetric and chloramine-T-iodide oxidation, it was found that the usual hydrolysis products of sucrose present, if any, were dextrose, lævulose and lævan, the proportion of dextrose being sometimes as high as nine or ten times that of lævulose.—E. B. Hughes: A new copper reagent for sugar determinations. This reagent consists of copper acetate (5 gm.) mixed with triethanolamine (5 gm.) and made up with water to 100 c.c. The reagent has selective reducing properties; its action on dextrose is appreciable; its action on lævulose is very much greater, and it is only negligibly active towards sucrose, lactose and maltose. By modifying the formula (also by purifying

the triethanolamine) the reagent can be made to react strongly with lævulose, but not to oxidise dextrose.—W. G. Moffitt: A colorimetric method for the determination of chloroform. The blue colour reactions given by chloroform with  $\alpha$ - or  $\beta$ -naphthol in a strong solution of sodium hydroxide have been made the basis of a rapid colorimetric method of determining chloroform. None of the seven chloro compounds tried (including carbon tetrachloride) was found to have any appreciable influence on the reaction with  $\beta$ -naphthol, although  $\alpha$ -naphthol gives a blue coloration with carbon tetrachloride under the conditions of the test.

#### MELBOURNE

Royal Society of Victoria, Aug. 11.—Leo W. Stach: Victorian Tertiary Polyzoa. (2)—Catenicellidæ. A review of this typically Australian group of the Polyzoa and a suggested new subdivision into three subfamilies, based on the position of the ovicell on the zoarium. This paper discusses the new subfamily Vittaticellinæ and correlates ovicelled zoecia described as distinct species with previously described forms.

#### ROME

Royal National Academy of the Lincei, May 1.—G. Armellini: The increment of the eccentricity in the problem of two bodies of diminishing mass, with applications to the orbits of binary stars. For a system consisting of a satellite and a principal star, it has been shown that, if the mass of the system is a decreasing function of the time, the mean orbital distance is an increasing function of the time. Some authors consider that, under these conditions, the eccentricity remains virtually constant, but it is now shown that this view is inaccurate.—U. Broggi: Series of factorials and equations to the differences.—R. Caccioppoli: Linear functionals in the field of analytic functions.—A. Mambriani: The summability of Fourier's double series of discontinuous functions.—T. Boggio: A theorem of Siacci for the motion along a curve.—A. Consiglio: A revolving elliptical obstacle invested by an irrotational plane current.—G. Agamennone: The reflection of seismic waves at the antipodes as a cause of earthquake shocks. An attempt was made by Oddone in 1907 to prove that seismic waves, generated by a violent earthquake shock, may be propagated along the earth's diameter to be reflected back along their path and thus give rise to a shock of less intensity than that of the original shock; a second such reflection, giving another shock, was also considered possible. Various difficulties involved in such hypothesis are now discussed.—B. Rossi: Secondary effects of penetrating corpuscular radiation. In traversing matter, the corpuscles of penetrating radiation generate a secondary radiation, probably also corpuscular. The number of such secondary corpuscles generated in iron is only about one-half of the number generated in lead and is less than would correspond with the ratio between the two densities. The penetration in iron is, however, about three times that in lead, so that the number of secondary rays in equilibrium with the penetrating corpuscular radiation should be somewhat greater in iron than in lead.—B. Rossi and B. Crinò: Anomalies in the absorption of penetrating radiation. Measurements of the absorption in thin lead screens have been made to show the influence of secondary radiation in experiments carried out by the coincidence method

and to indicate how such influence depends on the position of the absorbing screens.—F. De Carli: Compounds of urea with alkaline-earth bromides. The solubility isotherms at 11° of the systems,  $\text{CaBr}_2\text{—CO(NH}_2)_2\text{—H}_2\text{O}$  and  $\text{SrBr}_2\text{—CO(NH}_2)_2\text{—H}_2\text{O}$  reveal the formation of the compounds,  $\text{CaBr}_2\cdot 4\text{CO(NH}_2)_2\cdot 2\text{H}_2\text{O}$  and  $\text{SrBr}_2\cdot 4\text{CO(NH}_2)_2\cdot 2\text{H}_2\text{O}$ , the existence of which in solution is not, however, shown by measurements of the density and fluidity.—D. Marotta and G. Rosanova: The structure of C-substituted derivatives of barbituric acid. The formation of barbituric acid and its C-substituted derivatives by condensation of malonic acid and its derivatives with carbodiamide indicates for these compounds the structure  $\text{CH}_2\text{R}_2\langle \begin{smallmatrix} \text{CO}\cdot\text{NH} \\ \text{CO}\cdot\text{NH} \end{smallmatrix} \rangle\text{CO}$ .

Observations on the metallic derivatives of the compounds and their behaviour on fusion with potassium hydroxide raise a doubt as to the accuracy of this constitution.—B. Monterosso: Cirrepedological studies (7). Euryalinity and anabiosis in *Chthamalus stellatus* Ranzani. When immersed in fresh water, *C. stellatus depressus* survives for four months at the most and undergoes a partial crisis in its motor activity, but there is no arrest in the relative function and no assumption of a hypnic state (Kreps' *Salzschlaf*).—M. Sacchetti: Certain *Zygosaccharomyces*. Copulating yeasts appear to be widely diffused in Nature and a number have been isolated from various Italian products. None of these could be made to sporulate by Hansen's method, but all sporulated on the upper portion of streak cultures on agar or gelatine. To two new species the names *Zygosaccharomyces gracilis italicus* and *Z. felsineus* are given.—Federico Millosevich: Obituary notice of Ferruccio Zambonini.

## SYDNEY

Royal Society of New South Wales, July 6.—A. R. Penfold and F. R. Morrison: The occurrence of a number of varieties of *Eucalyptus radiata* (*E. numerosa*) as determined by chemical analysis of the essential oils (1). The several physiological forms of this plant cannot be distinguished on morphological evidence but are readily differentiated by the variation in the chemical composition of the essential oils. The forms can also be separated in the field by crushing the leaves and noting the odours. The chemical evidence in support of the physiological forms is taken from the following data: specific gravity, optical rotation, refractive index at 20° C., composition.—H. G. Raggatt and H. F. Whitworth: The intrusive igneous rocks of the Muswellbrook—Singleton District. (2) The Savoy Sill, with rock analysis by W. A. Greig. This paper describes a large sill-like mass of Tertiary age which intrudes the Greta Coal Measures near Muswellbrook. The intrusion is shown to be a composite sill, the feeding channel of which appears to be partly exposed. The occurrence of two rock types is recognised, one analcite dolerite, and the other soda syenite. An analysis of each of these two types is given and their relationship to each other discussed both from the point of view of petrology and tectonic geology.—Francis P. Dwyer and David P. Mellor: The crystal structure of indium. While earlier goniometric studies made on electrodeposited crystals of indium have resulted in their assignment to the cubic system, the lines of a powder photograph made with an impure sample of indium have been interpreted as arising from a face-centred tetragonal structure.

In order to check the former observations, powder photographs have been made with carefully purified indium deposited on fine silver wires under different conditions of temperature and current density. In none of the photographs was there any indication of a pattern which could be attributed to a cubic space lattice. The face-centred tetragonal structure of Hull was confirmed. The constants found for the lattice were:  $a_0 = 4.587$  (0.002A.),  $c_0 = 4.954$  (0.002A.),  $a : c = 1.078$ .

## VIENNA

Academy of Sciences, June 23.—Anton Kailan and Rudolf Raff: Velocities of esterification of alcohols in acetic acid. Velocity constants, and their dependence on the structure of the alcohol, etc., have been determined for the esterification of a number of alcohols by acetic acid.—Guido Machek: Action of gaseous cyanogen on phenols (1): Dicyanogen and the three dihydroxybenzenes. Pyrocatechol yields a cyano-derivative, which may be acetylated, benzoylated and methylated, but resorcinol and quinol yield equimolecular additive compounds with dicyanogen.—Fritz Rieder and Elisabeth Rona: The ranges of the  $\alpha$ -rays of actinium products,  $\text{RdAc}$ , show, besides the main groups with ranges of 4.6 cm. and 4.25 cm., also groups of less intensity with the values 4.5, 4.2, and 4.1 cm. respectively. Ac X shows groups with the ranges 4.0 and 4.55 cm., as well as the principal group (4.2), and Ac C, the two known groups (4.9, 5.39). With Ac Em, the recently discovered subsidiary group (5.2) and a distinct double character of the principal group are noted. Ac A also exhibits signs of complexity (3 groups).—Gerhard Kirsch and Fritz Rieder: The neutron emission of beryllium. Investigation of the excitation of the beryllium nucleus to emit neutrons by the Wilson method shows that this is a resonance process, which can be brought about by  $\alpha$ -particles with ranges of 35.4, 30.0, 25.3, and about 15 mm. From consideration of the absorption curves it appears necessary to assume that emission of neutrons occurs preferably in the direction of impact of the  $\alpha$ -particles and in the opposite direction.—Marietta Blau and Herta Wambacher: The behaviour of a granule-free emulsion towards  $\alpha$ -particles. The blackening of such an emulsion by  $\alpha$ -particles follows laws different from those holding for the blackening of ordinary photographic films.—Walter Späth: Spectrographic detection of very small quantities of substance. The smallest quantities (in grams) detectable are, by the spark method:  $10^{-10}$  Cd,  $10^{-10}$  Mn,  $10^{-7}$  As,  $10^{-7}$  Te,  $10^{-8}$  Tl,  $10^{-11}$  Sr and  $10^{-9}$  Li, and by the arc method,  $10^{-10}$  Cd,  $10^{-9}$  Te,  $10^{-9}$  Tl and  $10^{-8}$  Mn.—Roman Lucerna: History of the development of the Matterhorn (4482 metres).—H. K. Barrenscheen and Johannes Pany: The rôle of phosphation in the intermediate carbohydrate metabolism of plants (2). Assimilating *Elodea canadensis* yields a hexosemonophosphoric acid which belongs to the levulose series but is different from Neuberg's ester. From germinating wheat a phosphated octa-amylose may be isolated and the action of taka-diastrase on this also gives a hexosemonophosphoric acid of the levulose series. Partial degradation of an artificially phosphated starch by means of taka-diastrase results in a phosphated octa-amylose identical with that derived from seedlings.—H. K. Barrenscheen, Johannes Pany, and Robert Berger: Glycogenolysis. Post-mortem glycogenolysis of the liver does not proceed linearly but follows a stepped curve, analogous to that of the

scission of inorganic phosphate, the coupling of the two processes being thus indicated. The glycolysis is accompanied by the appearance of a hexosemonophosphoric acid, the amount of which increases most during the period when the liberation of sugar and phosphate is declining. The hexosemonophosphoric acid isolated from rabbit and dog livers is chemically different both from those previously obtained from biological material and from the artificial products.—H. K. Barrenscheen and Béla Vásihrhelyi: Glycolysis of the blood (2): Pyrophosphate fraction and glycolysis. Except with pig's blood, the content of pyrophosphate in different bloods increases with the glycolytic power. The whole blood and the erythrocytes, and, to a less extent, the serum and plasma, contain an enzyme which effects the scission of inorganic pyrophosphate and is inhibited by fluoride.—H. K. Barrenscheen and Karl Braun: Glycolysis of the blood (3): Restriction of glycolysis. The pyrophosphate fraction seems to contain an essential part of the co-enzyme effecting glycolysis.—H. K. Barrenscheen, Karl Braun, and Miklos Dreguss: Inhibition of glycolysis and accumulation of methylglyoxal.—H. K. Barrenscheen and Karl Braun: Colour and precipitation reactions of methylglyoxal.—H. K. Barrenscheen and Miklos Dreguss: Colorimetric micro-method for determining methylglyoxal. By separating the bis-hydrazone formed with 2:4-dinitrophenylhydrazine, results accurate to  $\pm 4$  per cent are obtainable.—H. K. Barrenscheen, Karl Braun, and Miklos Dreguss: Inhibition of glycolysis and disappearance of methylglyoxal.—H. K. Barrenscheen, Leopold Frey, and Otto Renth: Muscle rigidity and co-enzyme.—H. K. Barrenscheen and Wilhelm Filz: Co-enzyme action (1): Inhibition of glycolysis and liberation of ammonia. The liberation of ammonia appears to be partly responsible for the inactivation of the co-enzyme in glycolysis.—Franz M. Kuen: Oxidation of sugar by atmospheric oxygen and hydrogen peroxide.

### Forthcoming Events

TUESDAY, OCT. 25

ROYAL ANTHROPOLOGICAL INSTITUTE.—Dr. P. V. van Stein Callenfels: "Some Early Migrations in the Far East", at 8.30 P.M.

FRIDAY, OCT. 28

INSTITUTION OF CHEMICAL ENGINEERS—(First Hinchley Memorial Lecture).—Mr. H. T. Tizard: "Chemical Engineering and the Aircraft Industry", at 6.30 P.M.

NORTH EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS—(Andrew Laing Memorial Lecture at Bolbec Hall, Newcastle).—Eng. Vice-Admiral Sir Reginald Skelton: "The Work of Andrew Laing", at 7 P.M.

EAST LONDON CHILDREN'S HOSPITAL, SHADWELL.—Sir Buckston Browne: "Lessons to be Learnt from a Study of the Darwin Family", at 8.45 P.M.

### Official Publications Received

GREAT BRITAIN AND IRELAND

Proceedings of the Royal Irish Academy. Vol. 41, Section B, No. 4: The Flora of the Turloughs, a Preliminary Note. By R. Lloyd Praeger. Pp. 37-45. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 6d.

Transactions of the Institution of Chemical Engineers. Vol. 9, 1931. Pp. 212. (London.)

Journal of the Society for the Preservation of the Fauna of the Empire. New Series, Part 17. Pp. 62. (Hertford: Stephen Austin and Sons, Ltd.) 2s.

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The Royal Technical College, Glasgow. Calendar for the One Hundred and Thirty-seventh Session, 1932-1933. Pp. 449+xxiii. (Glasgow.)

Record of the Royal Institution of Great Britain, 1932. Pp. 176. (London: Wm. Clowes and Sons, Ltd.) 5s.

The Journal of the Royal Anthropological Institute of Great Britain and Ireland. Vol. 62, January to June. Pp. xxvi+192+14 plates. (London: Francis Edwards, Ltd.) 15s. net.

Department of Scientific and Industrial Research. Report of the Building Research Board, with the Report of the Director of Building Research for the Year 1931. Pp. ix+158. (London: H.M. Stationery Office.) 3s. net.

Proceedings of the Royal Society of Edinburgh, Session 1931-1932. Vol. 62, Part 3, No. 19: Filial and Fraternal Correlations in Sex-linked Inheritance. By Prof. Lancelot Hogben. Pp. 331-336. 6d. Vol. 62, Part 3, No. 20: The Diffusion Coefficients of Bromine-Hydrogen, Bromine-Nitrogen, Bromine-Oxygen, and Bromine-Carbon Dioxide. By Dr. John E. Mackenzie and Dr. Harry W. Melville. Pp. 337-344. 9d. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)

Philosophical Transactions of the Royal Society of London. Series B, Vol. 221, B476: Experiments on the Development of Chick and Duck Embryos, cultivated *in vitro*. By C. H. Waddington. Pp. 179-230+plates 22-28. (London: Harrison and Sons, Ltd.)

The Strangeways Research Laboratory, Cambridge. Report for 1931. Pp. 18. (Cambridge.)

Hull Museum Publications. No. 174: Record of Additions and Activities. By Thomas Sheppard. Pp. 14. No. 175: Hull Shipping Pictures. By Thomas Sheppard. Pp. 23. No. 176: Mill and Engine Models at the Hull Municipal Museums; being an Account of some Historic Industrial Models. Made by W. Marshall. Pp. 27. No. 177: Ancient and Modern Wedgwood, exhibited in the Mortimer Museum, Carr Lane, Hull, July-August, 1932. Pp. 32. (Hull.)

### OTHER COUNTRIES

Commonwealth of Australia: Council for Scientific and Industrial Research. Pamphlet No. 29: The Possibility of the Entomological Control of St. John's Wort in Australia, Progress Report. By G. A. Currie and S. Garthside. Pp. 28. Pamphlet No. 30: The Binomics and Economic Importance of *Thrips imaginis* Nagall, with Special Reference to its Effect on Apple Production in Australia. By J. W. Evans. Pp. 48+3 plates. (Melbourne: H. J. Green.)

Memoirs of the Punjab Irrigation Research Institute. Vol. 4, No. 1: An Examination of some of the Factors determining the Hydrogen Ion Concentration of Suspensions of Punjab Soils. Part 1: The Effect of Concentration of the Soil Water Suspension. By R. C. Hoon and Dr. E. McKenzie Taylor. Pp. 11. 4 annas; 5d. Vol. 4, No. 2: An Examination of some of the Factors determining the Hydrogen Ion Concentration of Suspensions of Punjab Soils. Part 2: The Variation of the Hydrogen Ion Concentration of the Soil Suspensions with Time. By R. C. Hoon and Dr. E. McKenzie Taylor. Pp. 12. 4 annas; 5d. Vol. 4, No. 3: The Conductometric Method of Analysis as applied to Soil Survey Work. By R. C. Hoon. Pp. 10+2 plates. 6 annas; 7d. (Lahore: Punjab Irrigation Research Institute.)

The Indian Forest Records. Entomology Series, Vol. 17, Part 1: Entomological Investigations on the Spike-Disease of Sandal (*Santalum album* Linn.). Part 1: An Introductory Survey of the Problem. By Cedric Dover. Pp. iii+53. (Calcutta: Government of India Central Publication Branch.) 1 rupee; 1s. 9d.

Indian Institute of Science, Bangalore. Investigations on the Spike-Disease of Sandal. 5: Report of Progress made during the Quarter ending 31st March, 1932. Edited by Dr. V. Subrahmanyan. Pp. ii+18. (Bangalore.)

### CATALOGUES

Wild-Barfield Electric Furnaces for Works and Laboratories. Pp. 20. (London: Wild-Barfield Electric Furnaces, Ltd.)

Microscopes and Accessories. Pp. 112. (London: C. Baker.)

Movable, Focusing Self-sustaining Fittings for all Purposes. Pp. 8. (Hazel Grove, near Stockport: John Dugill and Co., Ltd.)

Automatic Temperature Control. (List No. T.R.2.) Pp. 32. (London: Negretti and Zambra.)

Patent Pyrometer Controller for Temperatures up to 1400°C (2550°F). (List No. T.R.7.) Pp. 8. The Negretti and Zambra Sea Surface Temperature Recorder. Pp. 4. (London: Negretti and Zambra.)

Standard Books and Periodicals: a Reference Catalogue for Librarians, Institutions, Scholars and Collectors. (No. 393.) Pp. 154. (Cambridge: W. Heffer and Sons, Ltd.)

Newton's Epidiascopes: High Intensity Model fitted with Special Diffusion Reflectors. Pp. 6. (London: Newton and Co.)

Steel Frame Cable Hangers for Armoured Cables. Pp. 2. (Aston, Birmingham: The Electric Depot, Ltd.)

X-Ray Camera. (Ron. 33.) Pp. 2. Electrometer Triode. (Trio. 33) Pp. 2. Glass Double Monochromator. (Specmo. 32.) Pp. 4. (Delft: P. J. Kipp and Zonen.)

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