

and that the Society consist in the first instance of such of the present company as shall subscribe an obligation to that effect—That the Committee be empowered, until the day of the next meeting, to receive the signatures of additional members, and to admit them Fellows of the Society. Messrs. Babbage, Jones, Hallam, and Drinkwater were nominated a Committee. M. Quetelet, of Brussels, to whom the formation of this statistical section of the British Association at Cambridge was mainly due, was elected the first honorary member.

"A statistical society was founded three or four years ago in Paris, and similar societies are now forming in other countries. This disposition of mankind to associate together for common objects will lead, at no distant period (*viz.*, at the time when representative governments shall have become general), to European, American, and Cosmopolitan Societies, composed of members of all the governments of Europe, America, or the world meeting together to devise plans for the good of all mankind. Among these will be, universal education, a universal system of weights, measures, and moneys, one common language, one common law, and universal freedom of commerce. As to the question of peace or war, there will be very little danger of the latter, when it is not the interest of any particular class of men to make it." (*Gentleman's Magazine*.)

Societies and Academies

LONDON

Royal Society, March 1. A. J. BRADLEY and J. W. RODGERS: The crystal structure of the Heusler alloys. In an investigation of the ferromagnetic alloys of copper, manganese and aluminium, an alloy was found which showed an almost complete change of crystal structure due to heat treatment. Drillings of this alloy, which had been annealed at 500° for several hours and cooled slowly to room temperature, were found to have the δ copper aluminium (Cu_3Al) type of structure. The alloy is non-magnetic, but on quenching from 800° C. it becomes strongly ferromagnetic. The structure is now entirely body-centred cubic, with a face-centred superlattice. On comparing X-ray powder photographs of the same specimen made with radiations from iron, copper and zinc anticathodes, it was found that the relative intensities of the weaker reflections varied with the wave-length of the radiation. This made it possible to distinguish the manganese atoms from the copper atoms. C. SYKES and H. EVANS: Some peculiarities in the physical properties of iron-aluminium alloys. An account is given of measurements of the resistivity of alloys of iron and aluminium containing 11–16 per cent aluminium by weight. Resistivity at room temperature depends on the rate of cooling of the specimens from a temperature of the order of 600° C. Alloys in this range consist of a single solid solution at all temperatures concerned. It is concluded, therefore, that rearrangement of atoms takes place in the alloys under slow cooling conditions, and the more regular arrangement so produced leads to a decrease in resistance. Experimental results suggest that the rearrangement of atoms in the space-lattice takes place over a considerable range of temperatures even under conditions of very slow cooling.

DUBLIN

Royal Dublin Society, December 19. J. REILLY, P. P. O'DONOVAN and Miss H. MURPHY: A note on the molecular complexity of amylose in potato starch. Cryoscopic determinations of the molecular weight of dry amylose dissolved in acetamide gave consistent values corresponding to the formula $(\text{C}_6\text{H}_{10}\text{O}_5)_2$. Desiccation experiments showed that drying at 78° C. under 10 mm. pressure completely removed all water and alcohol from the amylose, so that the relative simplicity of the molecules in acetamide solution could not be attributed to the formation of polysaccharide water or alcohol complexes. On the other hand, the ash-content of the amylose could not be reduced much below 0.9 per cent, and it is suggested that the presence of this small quantity of ash may possibly be of importance in the depolymerisation of the amylose. JOSEPH DOYLE and MARY O'LEARY: Abnormal cones of *Fitzroya* and their bearing on the nature of the conifer strobilus. The structure of abnormal staminate and hermaphrodite cones of *Fitzroya* is described. On the basis of these structures it is tentatively suggested that:—(a) the stamen and the bract of the ovulate cone are homologous. (b) There is no auxiliary structure, particularly no reduced branch, in the organisation of the ovulate cone, the ovules being directly related to the bract. (c) Neither bract nor stamen is a sporophyll in the sense of a structure in any way similar to a vegetative leaf carrying sporangia. (d) Both bract and stamen are the end development of an extreme reduction of a primitive reproductive branching system carrying sporangia, probably terminally, on the ramifications; the main plan of the cone being attained before, or at least independently of, the photosynthetic development which gave rise to the leaf.

PARIS

Academy of Sciences, January 15 (*C.R.*, 198, 213–292). The president announced the death of Paul Villard, member of the Section of Physics, Paul Vieille, member of the Section of Mechanics and Jean Cantacuzène, *Correspondant* for the Section of Medicine and Surgery. HADAMARD: Observation on a recent note by M. Adamoff. E. JOUGUET: Indifferent points and critical points. CH. ACHARD and LÉON BINET: The effects of sodium thiosulphate on poisoning by potassium cyanide. From experiments with fish it has been shown that sodium thiosulphate exerts a curative action in poisoning by potassium cyanide. J. FAVARD: A surface with given boundary. PAUL ALEXANDROFF: The local properties of closed ensembles. MANDELBRÖJT: Fourier's series with gaps. F. LEJA: A method of construction of Green's function belonging to any plane domain. A. RAUCH: The bands of divergence of certain functions of infinite order. NIKOLA OBRECHKOFF: The real zeros of polynomials. L. PONTRJAGIN: Compact topological groups and the fifth problem of Hilbert. V. A. KOSTITZIN: An integro-differential equation of elasticity. A. MAGNAN and H. GIRERD: The determination in a wind chamber of the polars of butterflies. ARMEN ASFAZADOUR: The lines of current round a plate in rotation, placed in a fluid current. E. CARVALLO: The velocity of the earth measured by purely terrestrial measurements. Calculations based on the experimental data of Esclangon. BERNARD LYOT: The

polarisation of the solar protuberances. An account of work carried out at the Meudon Observatory. Of the fourteen protuberances studied, all except one show distinct polarisation. J. P. MATHIEU: A class of tartaric compounds. Discussion of the composition of the tartrates of chromium, manganese, iron, nickel, cobalt and zinc. MME. IRÈNE CURIE and F. JOLIOT: A new type of radioactivity. A description of a new phenomenon. The emission of positive electrons by certain light elements (beryllium, boron, aluminium) when irradiated by the α -rays of polonium continues for some time after removing the source of the α -rays and in the case of boron this time may be as much as half an hour. The intensity of the radiation decreases exponentially with time and the periods differ for each element. These experiments prove the existence of a new type of radioactivity with emission of positive electrons (see also NATURE, Feb. 10, p. 201). MME. P. RUMPF: The kinetic study of the reaction between potassium iodide and hydrogen peroxide in acid solution. The rate of formation of the I_3 ion has been studied with the spectrograph. MME. SUZANNE VEIL: The action of the electric field on the stratified diffusion of the alkaline carbonates in gelatine. JOSEPH ZAWADZKI and GEORGES PERLINSKI: The decomposition of nitric oxide by platinum catalysts. The reaction is monomolecular and strongly retarded by oxygen. RENÉ DUBRISAY and GUY EMSCHWILLER: The oxidation of iodoform solutions. A study of the effect of impurities in the solvent. H. HÉRISSEY: Lusitanicoside. MME. RAMART-LUCAS: The colour and structure of the aromatic oximes. P. RUMPF: An electrochemical contribution to the problem of the constitution of the salts of triarylmethyl. G. CARPENISEANU: The determination of pyruvic acid. A modification of the method of Simon and Piaux. P. CARRÉ and D. LIBERMANN: The influence of the phenyl group on the reaction of thionyl chloride with primary fatty alcohols. R. DELABY, S. SABETAY and M. JANOT: The characterisation of double bonds by antimony trichloride. LAMARE: The Permian in the neighbourhood of Bidarray (Basses-Pyrénées). PAUL BOUVIER: A meteor observed in Morocco. N. THÉOBALD: The fossil insects of Célas (Gard). G. A. NADSON and C. A. STERN: New observations on the biological action of metals at a distance. R. BONNET: The neuro-muscular action of the amides and ammoniacal salts. MLADEN PAIĆ: The absorption spectra in the ultra-violet of sera from syphilitic subjects. S. NICOLAU, MME. L. KORCIOWSKA and M. MATHIS: Intranuclear inclusions in the nervous system of guinea pigs and of mice dead from experimental yellow fever. Genesis, morphology and interpretation.

ROME

Royal National Academy of the Lincei: Communications received during the vacation. E. ALMANSI: Deformations of elastic strips (9). In this final note, various further questions of purely analytical character are considered. T. VIOLA: Baire's functions of the first and second classes. If $y=f(x)$ and $x=\varphi(t)$ are two functions of Baire's first class, the compound function $y=F(t)=f(\varphi(t))$ is, at the most, of the second class. The conditions under which it can be affirmed that this compound function is of the first class are now discussed. A. TERRACINI: Congruences associated with respect to a surface. C. BERTOLINI: Study of an equation to the partial derivatives of the third order. R. CACCIOPOLI:

Non-linear elliptic equations to partial derivatives. B. DE FINETTI: Classes of equivalent aleatory numbers. MARIA CIBRARIO: Bernoulli's and Euler's numbers. C. AGOSTINELLI: Geodetic curvature of dynamic trajectories. Z. PYCHA: Radius for waves associated with phenomena. V. KUPRADZE: Diffraction of elastic waves on an elliptic contour. G. RACAH: Number of isotropic and hemi-isotropic tensors in spaces of several dimensions. The results previously obtained in determining the number of isotropic tensors of a Euclidean S_3 are extended to Euclidean spaces of several dimensions, true isotropic tensors being separated from hemi-isotropic tensors. D. PALERMO: Surface dilatations of elastic solids. G. B. BONINO and G. CENTOLA: Investigations on the theory of concentrated solutions of strong electrolytes; possibility of extension to the calculation of osmotic coefficients. The theoretical considerations used previously for calculating the activity coefficients of strong electrolytes are now applied to calculation of the osmotic coefficients of such solutions. Good agreement with experimental data is shown. F. GARELLI and G. RACCIU: Ethylacetanilide as a cryoscopic solvent, and the molecular weights of certain cellulose esters dissolved therein. This solvent crystallises better than triphenyl phosphate and freezing points of its solutions are easier to read. For its molecular freezing point depression the mean experimental value is 85.8 and the calculated value 87. At low concentrations, nitro-, acetyl- and ethyl-celluloses form true solutions in ethylacetanilide, their molecular weights corresponding with the dimeric formulae ($C_6 \times 2$). A. ROSSI and A. LANDELLI: Crystalline structure of the compound $MgPr$. This compound forms monometric crystals of density 4.67. The unit cell, of side 3.88 Å., contains one molecule. G. MEZZADROLI and A. AMATI: Action of certain alkaloids on the metabolism of glucides by *Aspergillus niger*. The consumption of glucose or sucrose by this mould in Wehmer's or Raulin's solution is increased by the presence of 0.05-0.3 per cent of strychnine or quinine, but caffeine has the opposite effect. R. NOVELLO: Observations on the activity of chloroplasts in a southern climate. Of 114 plants studied, 91 showed amyloferous chloroplasts, lipids also being present in 55 cases. Chloroplasts with only lipid inclusions were found in 19 plants, whilst with 4 of the plants neither starch nor lipids occurred in the chloroplasts. Lipids included in the cytoplasm were observed in a number of instances. R. SAVELLI: Heleochloroplasts. This name is given to a peculiar form of assimilatory plastid, characterised mainly by carrying a large parastromatic vesicle, and found in various plants. S. GENUSSA: Integration by quadrature of the equation $\delta^2z/\delta x^2 - a \delta^2z/\delta y^2 = f(x, y)$.

SYDNEY

Royal Society of New South Wales, November 1. E. C. ANDREWS: Origin of modern mountain ranges. Modern mountain systems comprise cordillera and ordinary plateaux. Both are earth undulations—broad and swelling as plateaux in the more stable earth structures, but crowded together to form cordillera in relatively unstable earth zones, with resultant subparallelism and syntaxis of ranges (with appropriate development of intermontane valleys). They are arranged marginally, in the main, to continents or great continental nuclei; their growth has been saltatory (punctuated with pauses of still-stand), yet so slow that large streams have main-

tained their ancient courses against the uplift; earth movements have determined the formation of the ranges; while isostasy, through rock flowage, has determined their form, namely, as undulations balancing each other in positions of variable unstable equilibrium. Earthquakes and volcanoes are incidental features. The cordillera and the main continental plateaux are physiographic unities, all being dependent upon a deep underlying and world-wide control operating in late and post-Tertiary time. A. R. PENFOLD and F. R. MORRISON: The essential oils of *Eucalyptus micrantha*, including a form rich in piperitone. The essential oil of *Eucalyptus micrantha* (type) is of no economic value, but that obtained from the new variety, var. *A.*, is of potential value since it contains 40-50 per cent piperitone. M. B. WELCH: Equilibrium moisture content of seasoned timber. Whilst it was found that a number of timbers indoors in Sydney only showed a mean variation of about 2.0 per cent moisture, at Broken Hill and Hay the variation was nearly 8.0 per cent, and whilst individual timbers in country districts during summer contained less than 5 per cent, in winter the figure reached was nearly 19.0 per cent moisture. Of a number of timbers used, Queensland maple showed the greatest fluctuation in moisture content.

Forthcoming Events

[Meetings marked with an asterisk are open to the public.]

Monday, March 12

VICTORIA INSTITUTE, at 4.30.—Dr. W. M. Christie: "The Jewish Immigrant Population of Palestine".

ROYAL GEOGRAPHICAL SOCIETY, at 5.—J. A. Steers: "Scott Head Island".

Tuesday, March 13

INSTITUTION OF PETROLEUM TECHNOLOGISTS, at 5.30.—Annual General Meeting.

PHARMACEUTICAL SOCIETY, at 8.30.—C. E. Carfield: "The British Pharmaceutical Codex—Some Notes on its Revision".*

ROYAL SOCIETY FOR THE PROTECTION OF BIRDS, at 3—(at Church House, Westminster, S.W.1).—Annual Meeting.

Wednesday, March 14

GEOLOGICAL SOCIETY, at 5.30.—Dr. L. Hawkes: "Some Javanese Volcanoes, with notes on the Tectonics of the Island Arcs of the East Indies".

TELEVISION SOCIETY, at 7.—Sixth Annual General Meeting.

Sir Ambrose Fleming: "Invention in Relation to National Prosperity and Legislative Control" (Presidential Address).

Thursday, March 15

INSTITUTION OF ELECTRICAL ENGINEERS, at 6.—C. C. Paterson: "The Electrical Engineer and the Free Electron" (Faraday Lecture).

Friday, March 16

ASSOCIATION OF APPLIED BIOLOGISTS, at 11.45—(at the Imperial College of Science and Technology, South Kensington, S.W.7).

At 11.45, Dr. W. Maldwyn Davies: "The Sheep Blowfly Problem".

At 2.30, Dr. I. Thomas: "Some lesser-known Pests of Cereals with Observations on the Source of Infestation".

J. C. F. Fryer: "The Colorado Beetle".*

Official Publications Received

GREAT BRITAIN AND IRELAND

International Agreement, Brussels, 1924. Venereal Diseases: Centres in the Ports at Home and Abroad where Seamen can obtain Treatment. (List 7a, revised.) Pp. 23. (London: Ministry of Health.)

Liverpool Observatory and Tidal Institute. Annual Report, 1933. Pp. 16. (Liverpool: Observatory and Tidal Institute.)

The Scientific Proceedings of the Royal Dublin Society. Vol. 21 (N.S.), No. 4: A Note on the Molecular Complexity of Amylose in Potato Starch. By Dr. J. Reilly and Miss H. Murphy. Pp. 37-42. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 6s.

A List of the more Important Collections in the University Herbarium, Cambridge. By J. S. L. Gilmour and T. G. Tutin. Pp. 40. (Cambridge: Botany School.) 2s. 6d.

Navy (Health). Statistical Report of the Health of the Navy for the Year 1932. Pp. 144. (London: H.M. Stationery Office.) 2s. 6d. net.

Imperial Bureau of Plant Genetics: Herbage Plants. Bulletin No. 14: Grassland Research in Australia; Future Programme and Contributions on Pasture Technique. Pp. vi+43. (Aberystwyth: Imperial Bureau of Plant Genetics.) 3s.

The Carnegie Trust for the Universities of Scotland. Thirty-second Annual Report (for the Year 1932-33), submitted by the Executive Committee to the Trustees on 7th February, 1934. Pp. iv+202. (Edinburgh: Carnegie Trust for the Universities of Scotland.)

The National Institute of Poultry Husbandry (Harper Adams Agricultural College), Newport, Shropshire. Bulletin No. 9: A Progress Report of Instructional and Experimental Work. Pp. 64. (Newport.)

Department of Scientific and Industrial Research. The Investigation of Atmospheric Pollution: Report on Observations in the Year ended 31st March 1933. (Nineteenth Report.) Pp. vii+99. (London: H.M. Stationery Office.) 5s. net.

OTHER COUNTRIES

U.S. Department of the Interior: Office of Education. Bulletin, 1933, No. 8: A Background Study of Negro College Students. By Ambrose Caliver. Pp. vii+132. 10 cents. Bulletin, 1933, No. 13: High-School Instruction by Mail; a Potential Economy. By Walter H. Gaumnitz. Pp. v+69. 10 cents. Bulletin, 1933, No. 14: The Effects of the Economic Depression on Education in other Countries. By James F. Abel. Pp. v+37. 5 cents. Leaflet No. 44: The Deepening Crisis in Education. Pp. 16. 5 cents. (Washington, D.C.: Government Printing Office.)

U.S. Department of Agriculture. Technical Bulletin No. 373: Studies of Fluorine Compounds for Controlling the Codling Moth. By E. J. Newcomer and R. H. Carter. Pp. 24. (Washington, D.C.: Government Printing Office.) 5 cents.

U.S. Department of the Interior: Geological Survey. Bulletin 846-A: Some Mining Districts of Eastern Oregon. By James Gilluly, J. C. Reed and C. F. Park, Jr. (Contributions to Economic Geology, 1933, Part 1.) Pp. viii+140+8 plates. 25 cents. Bulletin 846-B: Geology and Ore Deposits of the Takilma-Waldo District, Oregon; including the Blue Creek District. By Phillip J. Shenon. (Contributions to Economic Geology, 1933, Part 1.) Pp. v+141-194+plates 9-22. 20 cents. Bulletin 849-B: Lode Deposits of the Fairbanks District, Alaska. By James M. Hill. (Investigations in Alaska Railroad Belt, 1931.) Pp. x+29-163+plates 3-10. 35 cents. Bulletin 849-C: The Willow Creek Gold Lode District, Alaska. By James C. Ray. (Investigations in Alaska Railroad Belt, 1931.) Pp. viii+165-229+plates 11-20. 20 cents. (Washington, D.C.: Government Printing Office.)

University Observatory, Oslo. Publication No. 9: On the Interpretation of the Umkehr-Effect in Atmospheric Ozone Measurement. By Chaim L. Pekeris. Pp. 31. Publication No. 10: On the Trajectories of Electric Particles in the Field of a Magnetic Dipole with Applications to the Theory of Cosmic Radiation, First Communication. By Carl Størmer. Pp. 19+9 plates. (Oslo: Jacob Dybwad.)

Colony and Protectorate of Nigeria. Report on the Agricultural Department for the Year 1932. Pp. ii+47. (Lagos: Government Printer.) 4s. net.

U.S. Department of Agriculture. Technical Bulletin No. 399: A Study of Claypan Soils. By Irvin C. Brown, T. D. Rice and Horace G. Byers. Pp. 43. (Washington, D.C.: Government Printing Office.) 5 cents.

Publications of the Observatory of the University of Michigan. Vol. 5, No. 10: A New Method of Driving Equatorial Telescopes. By Robert R. McMath and Walter A. Greig. Pp. 123-131+2 plates. Vol. 5, No. 11: The Elements and Ephemeris of Comet 1933f (Whipple). By Allan D. Maxwell and Helen M. Porter. Pp. 133-135. (Ann Arbor, Mich.)

Library of Congress. Report of the Librarian of Congress for the Fiscal Year ending June 30, 1933. Pp. vi+264+20 plates. (Washington, D.C.: Government Printing Office.) 75 cents.

U.S. Department of Agriculture. Circular No. 295: The Obscure Scale on the Pecan and its Control. By Howard Baker. Pp. 20. 5 cents. Miscellaneous Publication No. 174: The Serpoid and Chalcidoid Parasites of the Hessian Fly. By A. B. Gahan. Pp. 148. 10 cents. (Washington, D.C.: Government Printing Office.)

South Australia. Annual Report of the Director of Mines and Government Geologist for 1932. Pp. 8. (Adelaide: Government Printer.)

Natal's Nature Sanctuaries in Zululand. By E. K. du Plessis. Pp. ii+23. (Pietermaritzburg: The Natal Witness, Ltd.)

CATALOGUES

Catalogue de livres anciens et modernes rares ou curieux relatifs à l'Orient. (No. 26.) Pp. 307-402. Catalogue des publications suivies d'une liste de grammaires et dictionnaires les plus usités. Pp. 16. (Paris: Librairie Adrien-Maisonneuve.)

B.D.H. Injections for Parenteral Medication. Pp. 54. (London: The British Drug Houses, Ltd.)