

### Early Science at the Royal Society.

October 4, 1667. Mr. Charles Howard suggested, that it might be considered, whether maiz might not yield a kind of sugar, the stalks of it containing a very sweet juice; and he desiring, that he might be furnished with an account of the way of ordering the sugar-canes for the making of sugar, Mr. Oldenburg offered an account relating to Barbadoes.

October 5, 1661. Sir Robert Moray produced unnealed glass hollow balls with a small hole in them; which being held in the hand till they were heated (the hole thereof being stopped with the palm of the hand) would fly to pieces.—Dr. Goddard to try the velocity of sinking bladders in water, and the lord viscount Brouncker in air.—Dr. Ent to give in writing some considerations, why it is hotter in summer than in winter.

October 7, 1670. There was read a Latin letter from Signor Montanari, containing some new observations by him of the non-appearance of some stars of the second magnitude in the sky, though formerly observed by Bayer and others; and intimating that he had sent a manuscript, containing various experiments on the breaking of the glass drops, a task imposed on him by the grand duke of Tuscany.

October 8, 1662. Mr. Boyle was desired to shew, at the next meeting, the second part of his experiment about coagulation, viz., the reducing the coagulated liquors to their former fluidity.

October 9, 1661. A living chameleon was presented to the society from Mr. Clayton by Dr. Henshaw.—Dr. Croune, Dr. Pope and Mr. Rooke were appointed a committee to view the propositions for inquiries in foreign parts.—The lord viscount Brouncker read a letter of Dr. Christopher Wren to Sir Paul Neile, concerning his hypothesis of Saturn.

1673. The president gave the council notice, that there had been lately with him a committee of the professors of Gresham College, and another of the Mercers company, inviting the Royal Society to return to that college, and to keep their assemblies there, as formerly they did before the fire. To whom he had returned his thanks for this kind offer, and for their respect to the Royal Society. The council thought good to have their hearty thanks returned to the said committee for their kindness and respect, yet without saying anything to them of acceptance or not acceptance; only, in case they should give occasion for saying more, that then it might be mentioned, that the business was under consideration. The persons appointed to give these thanks were the lord viscount Stafford, Sir Paul Neile, Sir John Lowther, Mr. Pepys, Mr. Colwall, Dr. Croune and Mr. Oldenburg, or any three of them.—Whilst this was doing, Sir Theodore de Vaux came in, being sent by the earl of Norfolk, earl marshal, to acquaint the council, that his lordship wondered, that they were not met in Arundel-house, as formerly, but yet hoped, that they would hereafter still continue their meetings there, as formerly; and that if they should remove to any other place, he could not but take it very unkindly.—Hereupon the president declared, that for this time he had caused the council to be summoned in this place (his own house?) for his particular convenience, his present occasions not having permitted him to go far off. And his lordship, at the desire of the council returned their hearty thanks to the earl marshal for his singular affection and respect to the Society.

October 11, 1669. Ordered that Dr. Merret be desired to send the collection made by Thomas Willisel in his first voyage, to the society at their next meeting at Arundel-house.

### Societies and Academies.

LONDON.

The Institute of Metals (Autumn Meeting), September 10.—D. M. Fairlie and G. B. Brook: The determination of sodium in aluminium.—D. H. Ingall: The relationship between tensile strength, temperature, and cold-work in some pure metals and single solid solutions. The critical inflection temperature is the all-important property of any metal or alloy for high temperature service, as it would appear to be the temperature above which viscous flow may take place and below which there is only stability of the material in the cold-worked state. Other things being equal, the higher the critical inflection temperature, the more suitable is the material.—H. Moore: On the effect of progressive cold-rolling on the Brinell hardness of copper. It has been stated that in the cold-rolling of copper, iron, tin and other metals and alloys the Brinell hardness rises rapidly during the initial stages of deformation and then diminishes. Experiments carried out at the Research Department, Woolwich, give no support to the suggestion that severe cold-rolling of copper beyond a certain stage induces softening.—F. W. Rowe: (1) Some experiments on the effect of casting temperature and heat-treatment on the physical properties of a high-tin bronze. The bronze of the highest tin content (copper, 86.0:tin, 15.95:phosphorus, 0.05) used in engineering practice is employed for special bearings where low tin phosphor bronzes and leaded phosphor bronzes have been found unsatisfactory. This alloy attains its greatest hardness (and probably best wearing properties) with the lowest casting temperature; this is, however, very often not practicable on account of the danger of "draws" in uneven sectioned castings.—(2) Some experiments on the influence of casting temperature and mass on the physical properties of Admiralty gun-metal. Admiralty gun-metal (copper, 88:tin, 10:zinc, 2) gives the best results in all sizes of bars with the lowest casting temperature, *i.e.* 1100° C., and the best tests of all with the  $\frac{1}{2}$  in. square bar cast at that temperature.—Tomojiro Tanabe: Studies in the aluminium-zinc system.—T. H. Turner and W. E. Ballard: Metal spraying and sprayed metal. The process of metallisation invented shortly before the War and known generally as Schoop's metal spray process was held back in its development by the unsettled condition of industry, but is now being operated commercially. The gas-operated metal spraying pistol now used in Great Britain and a rumbling barrel type of metallising apparatus which is used for repetition work on small articles were illustrated. All articles to be sprayed are sandblasted and, in certain cases, preheating of the article to be coated is recommended, as this also tends to improve the adhesion. By spraying lightly on to glass slips it has been possible to examine the individual particles of the sprayed metals. Photomicrographs of these show that the metal must be molten at the instant it strikes the surface to be coated. Solid articles have been built up by spraying and proved machineable and resonant. Practically any metal available in wire form and fusible in the oxy-hydrogen flame may be sprayed on to practically any surface, *e.g.* on to paper, fabric, wood, or metal. The surface produced is always matte, but may be polished if desired. The matte surface is an ideal foundation for paints. Completed structures can be coated uniformly with any desired metal for protection against atmospheric corrosion, chemical attack, or furnace conditions. The process has found a particular field in ship work, and is recommended for the zincing of rail ends and fishplates for connecting purposes on electric railways.

Yeringian—*C. cresswelli* and *C. subcæspitosum*, the latter closely resembling the Devonian *cæspitosum* of Devonshire and the Eifel and helping to strengthen the Devonian element in the Australian Silurian. In Spongophyllum there are two new species, one from the Yeringian of Victoria, *S. stevensi*, related to *S. sedgewicki*; the other, *S. shearsbii*, from the Yass beds of New South Wales. The genus *Columnaria* is represented by a new species from the Melbourneian, *C. flemingtonensis*, preserved as a faithful negative mould in a fine ferruginous mudstone.—Miss Leslie Kerr: The lignotubers of Eucalypt seedlings. The lignotubers are embryonic storage organs, and not pathological as was previously supposed. These basal inflations of the stem attain their maximum development in the species inhabiting the most arid areas, while six species inhabiting regions of high rainfall do not develop them.

August 14.—Prof. T. H. Laby in the chair.—E. Kidson: Some periods in Australian weather. Recent work was described in extension of Dr. Braak's theories regarding a three-year period, especially clearly shown in the pressure variations at Port Darwin. Strong evidence of an 18-months cycle in the atmosphere, of opposite phase in eastern and western hemispheres, equivalent to a nutation of the whole circulation system, was adduced. Characteristic annual variations of the velocity, pressure, and latitude of anticyclones were evolved. A high correlation was established between the annual latitude range of anticyclones and sun-spot numbers.—E. J. Dunn: The centenary of Selwyn the geologist.

### Official Publications Received.

British Museum (Natural History). British Birds: Summer Visitors. (Set C.11.) 5 cards in colour. British Birds: Winter Visitors. (Set C.12.) 5 cards in colour. (London: British Museum (Natural History).) 1s. each set.

The British Mycological Society Transactions. Edited by C. Rea and J. Ramsbottom. Vol. 9, Part 4, August. (London: Cambridge University Press.) 7s. 6d. net.

British Museum (Natural History). British Flowering Plants. Series 3. 5 cards in colour. (Set F.6.) British Flowering Plants. Series 4. 5 cards in colour. (Set F.7.) (London: British Museum (Natural History).) 1s. each set.

Mémoires de la Société de Physique et d'Histoire Naturelle de Genève. Vol. 40, Fascicule 1: La détermination des plagioclases dans les coupes minces. Par L. Duparc et M. Reinhard. Pp. 149+13 planches. (Genève: Georg et Cie.) 20 francs.

The Physical Society of London. Proceedings, Vol. 36, Part 5, August 15. Pp. xxii+341-442. (London: Fleetway Press, Ltd.) 6s. net.

Decimal Metric Congress, London, July 9th, 1924. A Conference held for the Purpose of Considering the most effective Means of securing the adoption of Decimal Coinage and the Metric System. Pp. 48. (London: Decimal Association.)

Transactions of the Natural History Society of Northumberland, Durham, and Newcastle-upon-Tyne. (New Series.) Vol. 6, Part 1. Pp. 114+lxii. (London: Williams and Norgate.) 5s.

Department of Mines: Memoirs of the Geological Survey of New South Wales. Geology, No. 8, Supplement: The Geology of the Broken Hill District. By E. C. Andrews. Supplementary Note on the Geology of the Broken Hill District. Pp. 27+9 plates. (Sydney: Alfred J. Kent.) 21s.

Memoirs of the Geological Survey of India. Palaeontologia Indica. New Series, Vol. 7, Memoir No. 4: An Incomplete Skull of Dinotherium, with Notes on the Indian Forms. By the late Capt. R. W. Palmer. Pp. ii+14+3 plates. 1.2 rupees. New Series, Vol. 9, Memoir No. 1: On the Blake Collection of Ammonites from Kachh, India. By Dr. L. F. Spath. Pp. ii+29. 12 annas. (Calcutta: Geological Survey of India.)

Bureau of Education, India. Indian Education in 1922-23. Pp. iv+45. (Calcutta: Central Publication Branch.) 8 annas; 9d.

Proceedings of the Royal Society of Edinburgh, Session 1923-1924. Vol. 44, Part 2, No. 16: On Mixed Determinants. By R. Vaidyanathaswamy. Pp. 168-184. 1s. 6d. Vol. 44, Part 2, No. 17: The Ultra-Violet Emission Spectra of the Halogens. By Dr. E. B. Ludlam and W. West. Pp. 185-196. 1s. Vol. 44, Part 2, No. 18: The Budde Effect in Bromine. By Dr. E. B. Ludlam. Pp. 197-201. 9d. Vol. 44, Part 2, No. 19: Apparatus to facilitate the Use of an Oxygen-Carbon Dioxide Mixture in the Treatment of Carbon Monoxide Poisoning. By Prof. Henry Briggs. Pp. 202-205. 9d. (Edinburgh: R. Grant and Son; London: Williams and Norgate.)

University of Liverpool Tidal Institute. Fifth Annual Report, 1924. Pp. 8. (Liverpool.)

Proceedings of the Geologists' Association. Edited by G. M. Davies. Vol. 35, Part 3, August 25th. Pp. 169-264. (London: E. Stanford, Ltd.) 5s.

The Memoirs of the Imperial Marine Observatory, Kobe, Japan. Vol. 1, No. 4, August. Pp. vi+137-239+49+46 plates (Kobe.)

Union of South Africa: Department of Agriculture. Science Bulletin No. 34: Kemp Fibres in the Merino Sheep. By Prof. J. E. Duerden and Miss M. Ritchie. Pp. ii+18. (Cape Town.) 3d.

Prospectus of the Royal College of Art, S. Kensington, London. Session 1924-1925. Pp. iv+28. (London: H.M. Stationery Office.) 6d. net.

Department of Scientific and Industrial Research. Summary of Progress of the Geological Survey of Great Britain and the Museum of Practical Geology for the Year 1923; with Report of the Geological Survey Board and Report of the Director. Pp. iv+173. (London: H.M. Stationery Office.) 4s. net.

The University of Birmingham: Faculty of Science. Careers to which Subjects may lead and other Information. Pp. 31. (Birmingham.)

Collective Index of the Journal of the Institute of Brewing, 1911 to 1923. Compiled by W. H. Bird. Pp. iv+330. (London: Harrison and Sons, Ltd.)

Imperial Department of Agriculture for the West Indies. Report on the Agricultural Department, Grenada, January-December 1923. Pp. iv+14. (Grenada: Government Printing Office.) 6d.

Merchant Venturers' Technical College. Calendar for the Sixty-ninth Session, 1924-25. Pp. 55+17 plates. (Bristol.) 6d.

### Diary of Societies.

MONDAY, OCTOBER 6.

SOCIETY OF ENGINEERS (at Geological Society), at 5.30.—E. Kilburn Scott: Pulverised Fuel.

INSTITUTE OF TRANSPORT (at Institution of Electrical Engineers), at 5.30.—Sir Lynden Macassey: Presidential Address.

TUESDAY, OCTOBER 7.

INSTITUTE OF PETROLEUM TECHNOLOGISTS (at Royal Society of Arts), at 5.30.—Dr. A. E. Dunstan: Recent Development in the Art of Cracking.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—E. B. Cook: The Glory of the Garden.

WEDNESDAY, OCTOBER 8.

MEDICAL OFFICERS OF SCHOOLS ASSOCIATION (at 11 Chandos Street, W.), at 5.—Dr. R. Hutchison and others: Discussion on The Relative Values of Stone-milled and other Flours and Breads in relation to the Nutrition of the Growing Child.

NEWCOMEN SOCIETY (at Iron and Steel Institute), at 5.30.—Rhys Jenkins: A Sketch of the Industrial History of the Coalbrookdale District.—T. S. Ashton: The Discoveries of the Darbys of Coalbrookdale.—J. W. Hall: Notes on Coalbrookdale and the Darbys.

THURSDAY, OCTOBER 9.

INSTITUTION OF AUTOMOBILE ENGINEERS (Graduates' Meeting) (at Water-gate House, Adelphi), at 7.30.

OPTICAL SOCIETY, at 7.30.—E. T. Hanson: Some Problems in the Theory of Optical Diffraction.—W. M. Hampton: (a) The Annealing of Glass; (b) The Re-annealing of Glass.

FRIDAY, OCTOBER 10.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—J. D. Johnston: Wonderlands of the Western Worlds.

JUNIOR INSTITUTION OF ENGINEERS, at 7.30.—N. Thornton: The Design of Static Sub-stations, with some notes on their Equipment.

SATURDAY, OCTOBER 11.

BRITISH PSYCHOLOGICAL SOCIETY (at University College), at 3.—Prof. C. Spearman: The New Psychology of "Shape" (Gestalt).—S. A. Hamid: Some Factors of Effectiveness in Mental ("Intelligence") Tests.

### PUBLIC LECTURES.

MONDAY, OCTOBER 6.

KING'S COLLEGE, at 5.30.—Prof. E. W. Scripture: What the Voice looks like.—Rev. Dr. F. A. P. Aveling: Introduction to Psychology. (Succeeding Lectures on October 13, 20, 27.)

TUESDAY, OCTOBER 7.

UNIVERSITY COLLEGE, at 5.—Prof. G. Dawes Hicks: Philosophy and Psychology.

KING'S COLLEGE, at 5.30.—Prof. H. Wildon Carr: The Philosophy of Bergson: Its Relation to Past Systems and to Present Science. (Succeeding Lectures on October 14, 21, 28, November 4, 11.)

WEDNESDAY, OCTOBER 8.

KING'S COLLEGE, at 4.30.—Dr. C. da Fano: The Histology of the Nervous System. (Succeeding Lectures on October 15, 22, 29, November 5, 12, 19, 26.)—At 5.30.—Prof. R. J. S. McDowall: The Human Body and its Function. (Succeeding Lectures on October 15, 22, 29, November 5.)

BEDFORD COLLEGE FOR WOMEN, at 5.15.—Miss Hosgood: Eastern Australia—Some Problems in Human Geography.

UNIVERSITY COLLEGE, at 6.—Prof. C. Spearman: The Current Views of Individual Differences in Ability.—At 7.—A. H. Barker: The Heating Equipment of a Large Country House.

FRIDAY, OCTOBER 10.

UNIVERSITY COLLEGE, at 5.—Prof. Borenius: History and Art: Painting in the Netherlands and Spain.—At 5.30.—Prof. S. L. Rashkovich: Water Supply and its Purification. (Succeeding Lectures on October 17, 24, 31.)