

Societies and Academies.

LONDON.

Physical Society, April 11.—Mr. F. E. Smith in the chair.—C. R. Darling and R. H. Rinaldi: The thermo-electric properties of bismuth alloys, with special reference to the effect of fusion. With a note on thermo-electric inversion. A number of different alloys of bismuth with lead and tin respectively were prepared, some of which expanded on freezing, whilst others contracted. The E.M.F. given by these alloys against copper was observed up to 400° C. or over, and it was found that (1) the change in E.M.F. due to the addition of increasing portions of either lead or tin to bismuth reached a maximum value for certain compositions; and (2) that the alloys which expanded appreciably on freezing showed a change in thermo-electric power at the freezing point. The methods employed were not sufficiently sensitive to decide whether the point of disappearance of the thermo-electric change was reached in the case of alloys which were unaltered in volume on freezing. One of the alloys (60 bismuth, 40 tin), when coupled with iron, shows the unusual phenomenon of thermo-electric re-inversion. With a cold junction at 0°, this couple shows a zero E.M.F. at 0°, 200°, and again at 350°.—J. J. Manley: (1) Preliminary measurement of a primary gas-grown skin. An electrical method for detaching a gas-grown skin from a glass surface is described. Determined in this way, the massiveness of the skin per unit area is much larger than is generally supposed. (2) Removal of gas-grown skins from a Sprengel pump. The pump possesses two vacuum tubes which are interposed between the cistern and the fall-tube. The vacuum tubes have external electrodes. When the pump is in use the electrodes are activated; and the mercury, in falling through the glow discharges, is largely freed from condensed and adsorbed gases.—W. N. Bond: Sub-harmonics produced by a tuning-fork. An extension of experiments described in NATURE of March 8, p. 355.

Royal Microscopical Society, April 16.—Mr. A. Chaston Chapman, president, in the chair.—T. Howard Rogers: Electric method of staining radulae. Radulae, after removal from the animal, are boiled in a 10 per cent. solution of caustic soda to remove the connective tissue, etc. After thorough washing in 10 per cent. acetic acid, they are smoothed out between moistened filter paper and laid between two polished metal plates (zinc and copper) attached by flexible leads to a 2-volt accumulator. Protoplasmic stains alone are suitable. They are dissolved to saturation in 33 per cent. acetic acid, and the zinc positive plate with the radulae upon it is placed in a dish and flooded with the stain. The process should continue until the tissues are somewhat over-stained. They are then washed with 25 per cent. HCl-alcohol solution until sufficiently decolorised, taken up the alcohol series and mounted in balsam.—T. Goodey: Recent work on nematode life-history. The following nematodes came under review: *Tylenchus dipsaci*, causing stem diseases in a number of plants of agricultural importance, *T. tritici* causing "cockles" in wheat, *Allantonema mirabile* from the body-cavity of a weevil, *Hæmonchus contortus*, the stomach worm of sheep, *Ancylostoma duodenale*, the human "hookworm," with special reference to skin penetration by the infective larvæ, *Syngamus trachealis*, causing "gapes" in chickens, *Ascaris* spp. of various animals, and *Habronema megastoma* from the stomach of the horse.

Royal Microscopical Society (Industrial Applications Section), April 23.—Sir Charles Parsons in the chair.—Annie D. Betts: The practical use of the microscope in the bee-keeping industry. The micro-

scope is of assistance to the bee-keeper in disease diagnosis and in questions of colour inheritance and constancy to type (important to the queen-breeder). It also makes possible the determination of the country of origin, if not the floral source, of a sample of honey; and by the same means (identification of pollen) enables the bee-keeper to determine the times of flowering of the principal nectar plants of his district.—S. R. Wycherley: Fibres, analytical and economic. From the analytical point of view it is desirable to make standard sets of slides, from which materials to be tested can be judged. In examining products of various kinds the plant hairs, being difficult to destroy and in many cases quite characteristic in form, often prove a method of investigating the purity of a compound, and the amount, if any, of the adulteration. The study of fibres from the economic point of view is also of great value. For example, cotton fibres are characterised by a peculiar twist, and the regularity of that twist together with the thickness of the hair itself is one of the tests for the quality of the cotton fibre used. Animal fibres also form important lines of investigation. For example, the scale marks covering the outer cuticle of the surface of the wool are very constant in various qualities of wool and form an important point in testing for quality.

Royal Anthropological Institute, May 6.—Prof. C. G. Seligman in the chair.—Sir E. Denison Ross: The origin of the Turks. The word "Turk" is properly applied to all the peoples of Central Asia speaking a Turkish dialect, the oldest of these being the Turki of Eastern Turkestan, the most modern the Osmanli Turkish of Constantinople. The migrations of the Turks from the heart of Asia to the Ægean can best be traced by a study of these dialects in their three groups of Chagatai, Tartar, and Turkish. The oldest inscriptions are those of the Orkhon and are the work of the Northern Turks, or Tú-chüeh, as they were known to the Chinese, from whom we get most of their history. The Tú-chüeh under their great Khans Tuman and Mokan had a stirring history, conquering all Central Asia up to the Oxus, and combining with the Sassanides of Persia to overthrow the Ephthalites, or White Huns, while by 568 they had conquered the Sassanides also and received an embassy from Tiberias Cæsar. After this glorious epoch they declined through internal division, and the highly civilised Uighurs, whose official religion was Manichæism, became the leaders of the Turkish race. Their brief empire was from 750-850, when they were destroyed as a power by the Kirghiz, but ever after provided the brains and culture of the Mongol conquerors. Then the Turks declined again until Chingiz Khan brought their history to its glorious zenith by his conquests of the thirteenth century, starting a period of greatness which only ended with the fall of Constantinople in 1453, and included the conquests of Tamerlane in Central Asia, and the domination of the great Moghuls in India. In conclusion, a few words may be said on the confusion between the three words "Turk," "Tartar," and "Moghul." "Turk" is the name by which these peoples always speak of themselves throughout the sixth, seventh, and eighth centuries, and their language they called "Turkcha," as do the Osmanlis to-day. As for "Tartar," it is probably derived from the Chinese "Ta-ta," corresponding to the Greek "Barbaros" and applied to their savage neighbours generally. To-day it is confined to the Turks of the Volga and Caucasus. "Moghul" is the same as "Mongol," and the Mongols were the race of Chingiz Khan, and the Moghul Emperors, in reality Turks, used the corruption "Moghul" that they might be thought to have the blood of the Mongol Chingiz in their veins rather than that of the Turkish Tamerlane.

DUBLIN.

Royal Dublin Society, April 29.—Prof. E. A. Werner in the chair.—C. Samman and J. B. Gatenby. Notes on acarine or Isle of Wight bee disease. Numbers of experiments have shown that healthy bees may become infected in twenty-four hours. The most beneficial treatment found was to feed the bees during the winter on candy containing 15 per cent. of *Succus allii*.—F. E. Hackett and T. A. Crowley: A physical method of separating the constituents of butter-fat. Using the well-known property of the absorption of fats by paper, a fat has been separated from butter-fat which solidifies about 10° C. and liquifies about 20° C. The separation of this constituent has an important bearing on the theory of the physical constitution of butter.—H. H. Poole: A mechanical device for sealing off radium emanation tubes. The capillary tube, which it is desired to divide into short lengths, is inserted in an apparatus somewhat similar to a miniature lathe provided with two chucks which are rotated independently at the same speed by gearing. These chucks grip the tube which passes through them both. They are allowed some end play in their bearings, so that the distance apart of their nearest ends may vary from 7 to 13 mm., and may be pressed apart by means of a spring. Thus if the tube be rotated and a small gas flame, mounted on a hinged arm, be applied at a point between the chucks, the tube is sufficiently drawn out to ensure a satisfactory seal-off. Each chuck contains a small piece of cycle valve tubing through which the emanation tube passes. This rubber tube can be compressed longitudinally by means of a screw collar so as partially to close the central hole and thus grip the capillary. The emanation tubes can be readily inserted and withdrawn with the aid of forceps, so that handling is obviated.

PARIS.

Academy of Sciences, April 22.—M. Guillaume Bigourdan in the chair.—E. Fournier: Cyclonic vortices of cirrus which do not extend to the level of the ground. These disturbances at the ground level show only as a simple depression composed of sensibly concentric isobars, moving with a velocity equal to that of the central axis of the vortex from which it results. Rigid dirigible balloons, if at sufficient height, may be affected by these phenomena, and the catastrophe of the *Dismude* was probably due to this cause. A formula is developed which will enable the commander of a dirigible to minimise the effect of contact with such a disturbance.—Jean Perrin and Mlle. Choucroun: Fluorescence, and the general laws relating to reaction velocities.—André Blondel: Vibration and resonance in axles carrying screw propellers.—J. B. Senderens: The catalytic preparation of benzyl ethers. Benzyl alcohol (108 gm.), heated in a flask fitted with a reflux condenser with 2 c.c. of $H_2SO_4 + 3H_2O$, between 130° and 140° C., is quantitatively converted into benzyl ether, $C_7H_7 \cdot O \cdot C_7H_7$, in about thirty minutes. The preparation of mixed ethers has been carried out by slight modifications of the same method: the properties of five mixed ethers thus prepared are given.—A. Pellet: A new theorem on equations.—M. Manderbrojt: Remarks on a note by M. Mordouhay-Boltovskiy.—J. Villet, P. Vernotte, and F. Fontenay: The methods of study of the evolution of caoutchoucs. Damping of the torsional oscillations.—Charles Lafon: A calculating apparatus designed to supplement numerical calculation and the use of tables utilised in group navigation.—Raymond Charonnat: The stereochemistry of ruthenium.—J. Seigle: The

composition of the gases from blast furnaces.—E. A. Martel: The largest cavern in Europe (Eis-Riesenswelt) and the circulations of subterranean waters in high mountains. This cavern is in the Tennen-Gebirge massif, at an altitude of 1641 metres, and is 36 kilometres S.S.E. of Salzburg. Labyrinths extending over 30 kilometres have been explored.—P. Lasareff: The general law of stimulation.—P. Mazé: The influence of the bactericidal power of raw milk on the lactic ferments grown in sterilised milk, and the empirical selection of lactic ferments.—G. Raymon: The anatoxins. The term diphtheric anatoxin is applied to a toxin which has been submitted to a high temperature for a prolonged period, with or without the addition of formaldehyde. A toxic plant albumen, abrine, and cobra poison have been submitted to the same treatment. These toxins not only become non-poisonous ("anatoxiques") but also confer immunity on animals (guinea-pigs).

ROME.

Royal Academy of the Lincei, January 13.—M. La Rosa: The constitution of variables such as Mira Ceti, according to the ballistic hypothesis of the speed of propagation of light. The hypothesis that the speed of light is dependent on that of the radiating source and that all variable stars are double or complex is applied to the case of Mira Ceti. The presence of a second star, revolving around this variable, besides the one recently observed by the Lick Observatory, is suggested.—L. Sabbatani: Pharmacological researches on iron: colloidal ferrous sulphide prepared in the presence of gelatin.—G. Albanese: Birational transformation of any algebraical curve into another without multiple points.—E. Čech: On projective geodesic lines.—S. Aurino: Photometric observations of R Leonis, RX Virginis, R Virginis.—A. Carrelli: On polarised fluorescent light. The influence of the solvent on the polarisation of fluorescent light issuing from a solution is examined. The emitted light consists of polarised light coming from particles and is not produced by dichroism or diffusion.—V. Ronchi: On testing optical surfaces and systems by fringes between uncentred gratings.—C. Di Capua and M. Arnone: The hardness of lead-bismuth and cadmium-bismuth alloys.—B. Oddo and G. B. Crippa: Discatole.—C. Artom: Tetraploidism of *Artemia salina* from Odessa in connexion with some general problems of genetics.—G. Lambertini: Histogenesis of formations and secondary organs in the human embryo. The fusion of the palate plates together and with the nasal partition, the development of the tooth tissue, of the nail and of the mammary gland, the production of skin and the origin of hair, are examined with the conclusion that these organs are formed by elementary morphogenetic processes (secretion, cell multiplication, etc.).

January 20.—V. Scialoja in the chair.—B. Grassi and M. Topi: Experiments on the supposed different races or species of vine Phylloxera.—S. Pincherle: Simple transcendental functions.—U. Cisotto: Kinetic energy of continuous fluid masses: various expressions for the kinetic energy.—S. Tranchi: The great "slide" of secondary calcareous masses of Mount Ausoni and Mount Lepini on to the Miocene deposits of the Valle del Liri and of the Valle Latina.—P. Scatizzi: Solution of a differential equation the unknown function of which is an index of derivation.—A. Amerio: Variability in the absorption of the sun's atmosphere. Differences occur in the transparency of the solar atmosphere from day to day, and in view of the fact that these do not exhibit any periodicity synchronising with the sun's rotation,

the suggestion is made that the cause lies in changes in the mass of the atmosphere of the sun.—G. Grablovitz: Harmonic law of teleseismic propagation. Formulæ are given which express the intervals between the epicentre and the first and second preliminary tremors respectively as functions of the angular distances of the epicentre. These formulæ are not empirical but are based on the principle of free propagation of the first seismic impulse by longitudinal and transverse waves through a sphere the density of which increases gradually from the surface to the centre. The values of the coefficients of the expressions given may require modification as further data become available.

Official Publications Received.

The Indian Forest Records. Vol. 10, Part 2: Oils and Fats from the Seeds of Indian Forest Plants. Part 6: The Oil from the Seeds of *Aleurites montana*, Wils. By Richard Neville Parker, Madyar Gopal Rau, Wheatley Alex. Robertson, and John Lionel Simonsen. Part 7: The Oil from the Seeds of *Salvia plebeia*, R. Br. By Madyar Gopal Rau and John Lionel Simonsen. Pp. 16. (Delhi: Government Central Press.) 9 annas.

Memoirs of the Department of Agriculture in India. Botanical Series, Vol. 12, No. 4: Studies in Indian Oil Seeds. No. 2: Linseed. By Gabrielle L. C. Howard and Abdur Rahman Khan. Pp. 135-183. 1.4 rupees; 2s. Botanical Series, Vol. 12, No. 5: Studies in Gujarat Cottons, Part 2. By Maganlal L. Patel. Pp. 185-262. 1.12 rupees; 3s. (Calcutta: Thacker, Spink and Co.; London: W. Thacker and Co.)

Report of the Kodaikanal Observatory for the Year 1923. Pp. 5. (Madras: Government Press.) 2 annas.

Ministry of Agriculture, Egypt. Cotton Research Board: Third Annual Report, 1922. Pp. xii+111. (Cairo: Government Publications Office.) 15 P.T.

Rocznik Astronomiczny Obserwatorium Krakowskiego. Supplemento Internationale, Nr. 2. Editio par T. Banachiewicz. Pp. iv+33. (Krakow.) Rhodessa Museum, Bulawayo. Twenty-second Annual Report, 1923. Pp. 12. (Bulawayo.)

Department of Commerce: U.S. Coast and Geodetic Survey. Results of Observations made at the U.S. Coast and Geodetic Survey Magnetic Observatory near Tucson, Ariz., in 1918 and 1920. By Daniel L. Hazard. (Serial No. 248.) Pp. 98. (Washington: Government Printing Office.)

Department of the Interior: Bureau of Education. Physical Education Series, No. 3: Suggestions for a Physical Education Program for small Secondary Schools; arranged with Special Consideration of the Problems in Physical Education which face the Local School Officials where there is no Director of Physical Education. By Walter F. Cobb and Dorothy Hutchison. Pp. vi+79. (Washington: Government Printing Office.) 10 cents.

Sixty-first Annual Report of the Secretary of the State Board of Agriculture of the State of Michigan, and Thirty-fifth Annual Report of the Experiment Station from July 1, 1921, to June 30, 1922. Pp. 672. (Lansing, Mich.)

Department of the Interior: United States Geological Survey. Water-Supply Paper 498: The Lower Gila Region, Arizona; a Geographic, Geologic, and Hydrologic Reconnaissance, with a Guide to Desert Watering Places. By Clyde P. Ross. Pp. xiv+237+23 plates. 50 cents. Water-Supply Paper 511: Surface Water Supply of the United States, 1919 and 1920. Part 11: Pacific Slope Basins in California. Pp. vii+456+2 plates. 40 cents. (Washington: Government Printing Office.)

Proceedings of the Geologists' Association. Vol. 35, Part 2. Edited by G. M. Davies. Pp. 89-167. (London: E. Stanford, Ltd.) 5s.

Ministry of Public Works, Egypt. Report on Investigations into the Improvement of River Discharge Measurements. By E. B. H. Wade. Part 5. (Physical Department Paper No. 13.) Pp. 21+11 plates. (Cairo: Government Publications Office.) 10 P.T.

Board of Education. Vacation Courses in England and Wales for Instruction in Various Subjects, 1924. Pp. 17. (London: H.M. Stationery Office.) 6d. net.

The Institute of Chemistry of Great Britain and Ireland. Register of Fellows, Associates and Students, corrected to 1st November 1923, with Supplementary Register to March 1924. Pp. 322. (London: Institute of Chemistry.)

Transactions and Proceedings of the Perthshire Society of Natural Science. Vol. 7, Part 5, 1922-23. Pp. 245-269+vi+lxix+xxxvi+8. (Perth: Perthshire Natural History Museum.)

Annual Report of the Council of the Yorkshire Philosophical Society for the Year 1923, presented to the Annual Meeting, February 11th, 1924. Pp. 55. (York.)

Diary of Societies.

MONDAY, MAY 19.

ROYAL INSTITUTE OF BRITISH ARCHITECTS, at 8.—S. Perks: London Town Planning Schemes—1666 and After.

ARISTOTELIAN SOCIETY (at University of London Club, Gower Street), at 8.—Prof. E. T. Campagnac: Make-Believe.

ROYAL GEOGRAPHICAL SOCIETY (at Aelfian Hall), at 8.30.—Ahmed Hassanein Bey: Through Kufra to Darfur.

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TUESDAY, MAY 20.

ROYAL SOCIETY OF MEDICINE, at 5.—General Meeting.

ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Prof. J. Barcroft: The Effect of Altitude on Man. IV. Acclimatisation to High Altitudes.

ROYAL STATISTICAL SOCIETY, at 5.15.—Dr. M. Greenwood: The Vital Statistics of Sweden and England and Wales: an Essay in International Comparison.

ZOOLOGICAL SOCIETY OF LONDON, at 5.30.—Secretary: Report on the Additions to the Society's Menagerie during the month of April 1924.—Major S. S. Flower: Exhibition of a remarkable Tortoise of the genus *Testudo*.—Sir Sidney F. Harner: Mesoplon and other Beaked Whales.—R. I. Pocock: Some External Characters of *Orycteropus afer*.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—H. Willford: Some Methods and Results in Nature Photography.

ROYAL ANTHROPOLOGICAL INSTITUTE (at Royal Society), at 8.15.—Mrs. Scoresby Routledge: The Austral Islands and Mangareva, S.E. Pacific.

WEDNESDAY, MAY 21.

ROYAL METEOROLOGICAL SOCIETY, at 5.—J. E. Clark, I. D. Margary, and R. Marshall: Report on the Phenological Observations in the British Isles from December 1922 to November 1923.—E. K. Robinson: Note on the Unusual Order of Flowering of the Hazel in 1924.—C. E. P. Brooks: The Distribution of Rainfall over Uganda, with a Note on Kenya Colony.—S. C. Russell: Exhibition of a Diagram showing Daily Records of Well Levels at Chilgrove, Sussex, and Deiling, Kent, during 1923.

GEOLOGICAL SOCIETY OF LONDON, at 5.30.—C. A. Sussmilch: The Geological History of South-eastern Australia, with special reference to the Carboniferous and Permian Periods.

ROYAL MICROSCOPICAL SOCIETY, at 7.45.—Dr. E. W. Bowell: The Mounting and Photomicrography of Radula.—Dr. R. J. Ludford: Experiments on the Impregnation of the Golgi Apparatus by means of Osmium Tetroxide.

ROYAL SOCIETY OF ARTS, at 8.—Sir William J. Pope: The Outlook in Chemistry (Trueman Wood Lecture).

INSTITUTION OF WELDING ENGINEERS (at Institution of Electrical Engineers), at 8.—Dr. J. H. Patterson: Power Supply for Electric Welding Operations.

THURSDAY, MAY 22.

MEDICO-PSYCHOLOGICAL ASSOCIATION (at Royal Society of Medicine), at 3.—Dr. J. Carswell: Some Sociological Considerations bearing upon the Occurrence, Prevention, and Treatment of Mental Disorders (Maudsley Lecture).

ROYAL SOCIETY, at 4.30.—Prof. J. W. Gregory and C. J. Gregory: The Geology and Physical Geography of Chinese Tibet, and its Relations to the Mountain System of South-eastern Asia.—*To be read in title only*:—Madge Kaye and Dorothy Jordan Lloyd: A Histological and Chemical Investigation of the Swelling of a Fibrous Tissue.—C. H. Browning, Prof. J. E. Cohen, S. Ellingworth, and R. Gulbransen: The Antiseptic Action of Compounds of the Apocyanine, Carbo-cyanine, and Iso-cyanine Series.—H. J. Watt: Dimensions of the Labyrinth correlated.

LINNEAN SOCIETY OF LONDON (Anniversary Meeting), at 5.—Presidential Address—Presentation of the Linnean Gold Medal, etc.

ROYAL INSTITUTION OF GREAT BRITAIN, at 5.15.—Dr. E. V. Appleton: Atmospheric Interference in Wireless Telegraphy (II).

C.B.C. SOCIETY FOR CONSTRUCTIVE BIRTH CONTROL AND RACIAL PROGRESS (at Essex Hall, Strand), at 8.—H. Graham Cannon: Reduction in Number of Offspring of Animals as they ascend the Ladder of Evolution.

FRIDAY, MAY 23.

PHYSICAL SOCIETY OF LONDON (at Imperial College of Science), at 5.—Prof. S. W. J. Smith, A. A. Dee, and W. V. Mayneard: The Magnetism of Annealed Carbon Steels.—A. A. Dee: Some Thermo-magnetic Properties of Nearly Pure Iron, Part 1; W. V. Mayneard: Part 2.—Dr. E. A. Owen and G. D. Preston: The Atomic Structure of Two Intermetallic Compounds.—Prof. A. O. Rankine: Demonstration of an Anomaly in Frictional Electricity.

ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN, at 7.—W. L. Rea: Wanderings in Northern Italy (Lantern Lecture).

ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—Dr. A. Balfour: Historical Aspects of Malaria.

SATURDAY, MAY 24.

ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Dr. W. G. Alcock: Musical Ornamentation: Its Origin and Development.

PUBLIC LECTURES.

TUESDAY, MAY 20.

UNIVERSITY COLLEGE (Department of Applied Statistics and Eugenics), at 5.30.—Miss M. Tildesley: Sir Thomas Browne, Author of "Religio Medici"—His Skull and Portraits.

GRESHAM COLLEGE, at 6.—A. R. Hinks: Astronomers of Four Centuries. (Succeeding Lectures on May 21, 22, and 23.)

WEDNESDAY, MAY 21.

IMPERIAL COLLEGE, ROYAL COLLEGE OF SCIENCE, at 5.15.—Prof. P. Zeeman: The Optical Effects of Motion (in English).

KING'S COLLEGE, at 5.30.—Prof. L. T. Hobhouse: Religions of the Empire.

THURSDAY, MAY 22.

INSTITUTE OF PATHOLOGY AND RESEARCH, ST. MARY'S HOSPITAL, at 5.—Dr. M. Greenwood: Is the Statistical Method of any Value in Medical Research?

UNIVERSITY COLLEGE, at 5.30.—Prof. T. P. Nunn: The Nature of Science.

FRIDAY, MAY 23.

KING'S COLLEGE, at 5.30.—Dr. E. R. Bevan: Ancient Ghost Stories and Theories about Ghosts.