

Contemporary Birthdays.

- February 19, 1858. The Duke of Bedford, K.G., F.R.S.
 February 19, 1859. Prof. S. Arrhenius, For. Mem. R.S.
 February 19, 1871. Dr. W. Diller Matthew, F.R.S.
 February 19, 1865. Sir Sven Anders Hedin, Hon. K.C.I.E.
 February 22, 1856. Prof. M. J. M. Hill, F.R.S.
 February 23, 1856. Viscount Cave, G.C.M.G.
 February 25, 1869. Prof. Arthur W. Crossley, F.R.S.
 February 26, 1864. Mr. John Evershed, F.R.S.

The DUKE OF BEDFORD, who was born in London, graduated at Balliol College. His Grace is a trustee of the British Museum and president of the Zoological Society of London.

Prof. ARRHENIUS was born at Wiljk, near Upsala. He is the originator of the theory of electrolytic dissociation, and was Nobel laureate in 1903. In the previous year he was awarded the Davy medal of the Royal Society for his application of the theory of dissociation to the explanation of chemical phenomena. In 1914 the Chemical Society allotted him its Faraday medal, and Prof. Arrhenius received it in person. On that occasion Sir William Crookes said, "The world is deeply in need of researchers both of the type of those whose genius is characterised by that fertility of resource in experimental investigation exhibited by Faraday and the type of Arrhenius. Both are revolutionaries and founders of new kingdoms. The world's debt to them is incalculable."

Dr. MATTHEW, palæontologist, was born at St. John, New Brunswick. He is curator of fossil vertebrates in the American Museum of Natural History, New York.

Sir SVEN ANDERS HEDIN, explorer and geographer, was born at Stockholm and educated there and in various foreign cities. In 1902 he was ennobled by the King of Sweden. He is Hon. D.Sc. (Oxon., Camb.). The Founder's medal of the Royal Geographical Society was awarded him in 1902. Sir Sven published "My Life as an Explorer" in 1925.

Dr. M. J. M. HILL, formerly professor of mathematics in the University of London, was born at Berhampore, Bengal. Educated at Blackheath, University College, London, and Peterhouse, Cambridge, he was 4th wrangler and Smith's prizeman (1879).

Viscount CAVE was born in London. Educated at Merchant Taylors' School, he graduated at St. John's College, Cambridge. Lord Cave is chairman of the Grand Council of the British Empire Cancer Campaign.

Prof. CROSSLEY is a Lancashire man. He went to Mill Hill School, and afterwards he graduated at the University of Manchester. He is also Ph.D. (Würzburg). Formerly Daniell professor of chemistry in the University of London (King's College), he is now director of the Cotton Industry Research Association, Didsbury. Prof. Crossley is an Officer of the Legion of Honour.

Mr. EVERSHEDE, until lately director of the Kodaikanal and Madras Observatories, is distinguished for his work in astrophysics. In 1918 he was awarded the gold medal of the Royal Astronomical Society for his investigations of the radial motion in sunspots, and more recently he has detected the shift of the lines of the solar spectrum required by the theory of relativity.

Societies and Academies.

LONDON.

Royal Society, February 11.—H. G. Thornton and N. Gangulee: The life-cycle of the nodule organism *Bacillus Radicicola* (Beij.) in soil, and its relation to the infection of the host plant. A regular cycle of changes was found, unbanded rods, cocci, and banded rods successively predominating in the soil. Increase in the percentage of cocci was associated with increased bacterial numbers and with the appearance of motile forms. When soil and sand is inoculated with a suspension of the bacteria, the latter commence, after a lag period, to spread radially at an approximate rate of 1 inch in 24 hours. The lag is apparently related to the time taken for cocci to predominate in the soil, and is decreased by using milk and 0.1 per cent. of calcium phosphate as the inoculating fluid. The bacteria multiply rapidly in the soil into which they have recently spread. Lucerne plants grown from seed inoculated with a suspension of bacteria in milk + 0.1 per cent. calcium phosphate showed a considerable increase in nodule numbers and in yield compared with plants from seed inoculated with a suspension in milk alone.—C. E. Walker: The meiotic phase in certain mammals. The daughter chromosomes of the last somatic division before the first meiotic split longitudinally. The semivalent half-chromosomes lengthen out, until the whole nucleus is filled with fine semivalent threads. This is the end of the telophase. These semivalent threads join together again in pairs to form univalent filaments, which join laterally in pairs to form bivalent loops. The filaments, after forming these loops, separate except at their ends. These are the meiotic bivalent chromosomes. At the first meiotic division, the pairs of whole somatic chromosomes, joined by their ends, separate and are distributed, half to each daughter cell. The longitudinal split in the daughter chromosomes of the somatic division which reappears in the telophase of the first meiotic division, is not consummated until the second meiotic division. The term "exileisis" is suggested for the process by which each of the daughter chromosomes becomes converted into two semivalent threads.—J. Needham and Dorothy Needham: Further micro-injection studies on the oxidation-reduction potential of the cell interior. The results of the micro-injection of pH and rH indicators into living cells have been investigated. Oxidation-reduction potential indicators exhibit no anomalies when injected into *Amæba proteus*. It appears, therefore, that all the dyes on the scale may be used with biological material. The amæba is capable of oxidising the leucoform of indicators of lower oxidation-reduction potential, and the latter is probably independent of the percentage of oxygen in the external atmosphere. *Nyctotherus cordiformis* (an anaerobic protozoon) possesses an internal pH of 7.1 and an internal rH of 19.0-20.0 under aerobic conditions, while under anaerobic conditions, the latter changes to 9.5-10.5.—J. W. H. Harrison and F. C. Garrett: The induction of melanism in the Lepidoptera and its subsequent inheritance. Both in the British Isles and on the Continent in large manufacturing and urban areas, melanic forms have arisen. The conditions point immediately to the smoke in the atmosphere of large towns as responsible for the melanism and, moreover, indicate that it influences insects in the larval state by means of their food-plants. Thus it should be possible to induce melanism by (1) feeding up non-melanic strains of Lepidoptera in melanic districts, and (2) feeding them in non-melanic areas on food-plants artificially charged with impurities known to exist in

or on the foliage of plants found in manufacturing centres. Both methods were employed on *Selenia bilunaria*, *Tephrosia crepuscularia*, and *T. bistortata*. Melanic examples appeared in all the experimental broods, and in numbers diverging widely from Mendelian expectation. The melanism so induced in *Selenia bilunaria* and *Tephrosia bistortata* behaved as a Mendelian recessive, while in *T. crepuscularia* it acts as a dominant.—**J. Gray**: The mechanism of ciliary movement.—(v.) The effect of ions on the duration of beat.—**N. H. W. Maclaren**: The early development of *Cavia*: Note on associated remains of previous placentation.

Linnean Society, January 21.—**H. B. Fantham** and **Annie Porter**: On two protozoan parasites found in the latex of *Ficus edulis* and *Euphorbia striata*. Two species of herpetomonads were found respectively in the latex of *Euphorbia striata* and *Ficus edulis* in Johannesburg, South Africa; the former is probably a strain of *Herpetomonas (Leptomonas) davidi*, and the latter is regarded as a new species. The plants parasitised do not show any marked pathological symptoms, the infection being localised. The number of infected plants was very small in each case. The possible source of the herpetomonads is of interest. They are best known as parasites of the alimentary tract of insects, both blood-sucking and non-blood-sucking. Marks of punctures, very probably made by the proboscides of plant-feeding Hemiptera, were seen on the *Euphorbia*, while green flies, *Lucilia* sp., were found on the fig-leaves, which may have inoculated the flagellates into the latex of the plants. They occur in man and dogs under the name of *Leishmania kala-azar*, and skin-sores are caused by them. It is interesting to find the latex of certain plants forming a natural reserve of herpetomonads.—**H. H. Thomas**: Discussion: The relation between the Caytoniales and modern flowering plants. The recently described Caytoniales are of some interest because they were Angiosperms without flowers, their reproductive structures being megasporophylls bearing carpels and microsporophylls bearing anthers. A single carpel and a single anther of this fossil type can be compared somewhat closely with the corresponding structures in the modern flower. It is unlikely that the Caytoniales represent the direct ancestors of the flowering plants, but they may be derived from the same stock which gave rise to that group. Assuming some relationship, the structure of Caytonia points to the carpels of the primitive Angiosperms having double rows of ovules produced in a dorsal median position near the vascular strands, rather than to the occurrence of marginal ovules produced on the sides farthest away from the vascular strands. Caytonia and Gristhorpia were undoubtedly wind-pollinated, and contained many ovules in each carpel. They can therefore be cited in opposition to the views (Robertson) that the primitive Angiosperms were insect-pollinated. The seeds of the Caytoniales are small in size and do not agree with the view that the primitive Angiosperm seeds were large like those of *Cycas*. The comparison of the microsporophylls (*Ankholitus Arberi*) with the modern stamens may indicate that the primitive anther had four equal pollen-sacs arranged longitudinally, and was inserted by its base on the filament. A group of plants resembling both the Caytoniales and the Bennettitales, and also derived from the Pteridosperms, is suggested as the origin of many flowering plants. Recent discoveries tend to show that the Angiosperms originated at a much earlier period than was formerly supposed, and that at least one group of early Angiosperms achieved a very wide distribution in early Mesozoic times.

PARIS.

Academy of Sciences, January 11.—**Pierre Weiss**: Paramagnetism independent of the temperature. Solutions of luteocobaltic chloride and of potassium bichromate possess a magnetisation coefficient independent of the temperature. This fact is of importance in the theories of paramagnetism. A discussion of the possible hypotheses leads to the conclusion that constant paramagnetism should be an intra-atomic phenomenon.—**Ph. Le Corbeiller**: The substitutions of the complex modular group.—**Ladislas Nikliborc**: Hyperharmonic functions.—**J. Kampé de Fériet**: The uniformisation of a class of functions defined by integral series with meromorphic coefficients.—**Constant Lurquin**: Binary covariation.—**Kiveliovitch**: The conditions of a binary shock in the problem of three bodies.—**Emile Belot**: Remarks on the dense internal nucleus of the sun and on the movement of sunspots in latitude.—**Pauthenier**: The photographic measurement of the electrostriction in the case of carbon tetrachloride. The experiments described are in good agreement with theory for the case of carbon tetrachloride.—**H. Pélabon**: Detection and the stability of certain detectors. Any imperfect contact metal-dielectric-metal may be used as a detector of wireless waves. If the dielectric interposed is gaseous the detector obtained is unusable on account of its extreme instability due to temperature changes. Powdered, badly conducting solids form stable detectors.—**Andrieux**: The electrolysis at a high temperature of oxides dissolved in boric acid or in borates. Details of a method by which sodium can be obtained by the electrolysis of borax.—**Baykoff**: The theory of hardening of hydraulic cements. The author considers that three stages can be traced in the hardening of cement. The first stage is one of solution during which the liquid becomes saturated with the various soluble constituents. In the second stage all the products of the chemical reaction enter into the colloidal state. This corresponds to the commencement of the setting. In the final stage the gels are transformed into crystalline aggregates and this is the period of hardening.—**A. Kling** and **A. Lassieur**: The stability of solutions of carbonic acid. In a previous communication the authors have shown that water, purified as completely as possible, possesses an acid reaction, corresponding to $pH=5.8$. One plausible explanation of this would be that it is due to retained carbon dioxide. Direct experiment proved that a solution of carbon dioxide in highly purified water lost the whole of its carbon dioxide on exposure to air and gave the same acidity (5.8) as water purified without access to carbon dioxide.—**Georges Delbart**: Study of the fragility of cold drawn steel.—**T. Karantassis**: Researches on stannous chloro-iodide, bromo-iodide, and chloro-bromide. Data are given in support of the existence of the definite compounds $SnCl$, SnI , and $SnClBr$.—**J. Bougault**: An example of etheroxide of a hydrated ketone.—**M. Faillébin**: The hydrogenation of ketones in the presence of pure and impure platinum black. It has been shown in earlier communications that the reduction products of ketones and aldehydes by hydrogen in the presence of platinum black are affected by the purity of the platinum. In the present paper an attempt is made to study the mechanism of the phenomenon. A platinum-iron catalyst was treated with a mixture of acetic acid and acetylacetone to remove the iron. The catalyst thus obtained functions as pure platinum black in the reduction of ethyl acetoacetate.—**Raymond Delaby**: The catalytic oxidation of vinylalkyl-carbinols into vinylalkylketones in the presence of

palladium black. The oxidation of unsaturated secondary alcohols can only be carried out in a gaseous system at low pressures, but the yields are not good.—André Cornillot: The bis-phthalide carboxylic esters.—P. Gaubert: Detection (in wireless telephony) and the facies of crystals of galena and pyrites.—Conrad Kilian: The proportion in which the Silurian period is represented by its formation of the Tessian enclosure, and on the presence of the Ordovician in the Sahara.—G. Georgalas and N. Liatsikas: The spectrum analysis of the flames from the Santorin volcano (eruption of 1925). From the lines recorded in the spectrograph, the gaseous mixture issuing from the central dome of the volcano contained hydrogen, vapour of sodium chloride, oxygen, nitrogen, and probably ferric chloride.—F. X. Skupiński: The evolutive cycle in *Didymium difforme*.—A. Hée: The influence of temperature on the intensity of respiration of submerged plants. The plants studied were *Elodea canadensis*, *Myriophyllum spicatum*, and *Cladophora*, and the temperatures varied between 10° C. and 39°·5 C. The respiration increased with rise of temperature and there was no optimum temperature.—P. P. Stanesco: The quantitative variations of the carbohydrates in the leaves of green plants in the course of a day.—M. Bridel and C. Béguin: The application of the biochemical method of research to the glucosides undergoing hydrolysis by rhamnodiastase to the study of the fresh roots of *Polygonum cuspidatum*. The production of a new glucoside, polydatoside. The results of the action of rhamnodiastase on the root extract indicated the presence of a new glucoside. Details of the mode of extraction and purification of this substance are given, together with its physical and chemical properties.—L. Mercier: The orthogenesis of the longitudinal vibrator muscles of flight in the Diptera.—Jean Piveteau: The importance of structural characters in the interpretation of certain fossils classed with the reptiles.—Maurice Aubertot: The contractility of the excretory apparatus in the larvæ of *Rhabditis pellio*.—L. M. Bétancès: The genesis of the hæmatopoietic organs and of the blood cells in the invertebrates.—A. Policard: The movements of sarcomatous cells cultivated *in vitro*. The most marked characteristic of the sarcomatous cells is incessant and rapid amœboid movement.—Raymond-Hamet: The action of yohimbine and the active alkaloids of ergot on the sympathetic vasomotor innervation of the kidney.—J. Risler and Foveau de Courmelles: The physiological action of the ultra-violet rays transmitted by the thin glass in ordinary use. It is generally held that ultra-violet rays emitted by a source of light in the interior of a glass apparatus are not harmful. Four cases of accident resulting from the use of apparatus constructed of light glass are described which show that injurious effects on the skin can be produced by the absorption of rays in the region between $\lambda = 2960 \text{ \AA.U.}$ and $\lambda = 3120 \text{ \AA.U.}$ —Daniel Berthelot: Remarks on the preceding communication. Additional data confirming the results.—R. Fosse: The formation, by heating plant juices, of urea and of a substance giving the same hydrazine colour reaction as formol. The simultaneous formation, by heating plant juices, of urea and of a substance giving the colour reaction of formol, results from the hydrolysis of a ureide.—G. Delamare and Saïd Djémil: Abnormal forms of *Plasmodium vivax*.—A. Paillet: A new disease of the nucleus or grasserie of the larvæ of *Pieris brassicæ* and a new group of micro-organisms.—Mme. Phisalix: The natural immunity of the eel against the virus of hydrophobia and the rabicidal action of its serum. The eel is naturally refractory to hydrophobia and

its serum destroys the virus of hydrophobia *in vitro*. The serum can also be used to protect animals against hydrophobia.—B. Issatchenko: Nitrification in the sea.—X. Debedat: Ulcerated Röntgen epitheliomas cured by high frequency treatment (diathermo-coagulation). After giving details of his own cure by this treatment, the author concludes that radiologists need not die of cancer brought on by their work.

Official Publications Received.

- Board of Trade. Catalogue of the British Industries Fair 1926, The White City, Shepherds Bush, London, W.12, February 15th-26th. Organised by the Department of Overseas Trade. Pp. xxx+176+112. (London: Department of Overseas Trade.) 1s.
- Memoirs of the Asiatic Society of Bengal. Vol. 6: Zoological Results of a Tour in the Far East. Edited by Dr. N. Annandale. Part 10: The Amphipoda of Talé Sap. By Dr. Chas. Chilton. Pp. 531-558. 1.2 rupees. Vol. 9, No. 2: Geographic and Oceanographic Research in Indian Waters. By Major R. B. Seymour Sewell. Part 2: A Study of the Nature of the Sea-Bed and of the Deep-Sea Deposits of the Andaman Sea and Bay of Bengal. Pp. 27-50+plates 6-7. 2.4 rupees. (Calcutta.)
- Meddelelser fra Kommissionen for Havundersøgelser. Serie Fiskeri, Bind 8, Nr. 1: On the Age and Growth of the Haddock (*Gadus oglefinus* L.) and the Whiting (*Gadus merlangus* L.) in Icelandic Waters. By Bjarni Semundsson. Pp. 33. Serie Fiskeri, Bind 8, Nr. 2: On the Diurnal Vertical Movements of Young of some Fishes in Danish Waters. By Dr. A. C. Johansen. Pp. 27. (København: C. A. Reitzel.)
- Proceedings of the Royal Irish Academy. Vol. 37, Section A, No. 2: A Quaternary Substitute for the Theory of Tensors. By W. J. Johnston. Pp. 13-27. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 1s.
- Union of South Africa. Department of Mines and Industries: Geological Survey. Geological Map of the Union of South Africa. On the Scale of One to a Million. In 4 Sheets, 40 in. x 30 in. The Geological Structure of the Union: an Explanation of the Geological Map of the Union of South Africa. By Dr. A. W. Rogers. Pp. 34. 6s. Map, with Explanation, 26s. (Pretoria: Government Printing and Stationery Office.)

Diary of Societies.

SATURDAY, FEBRUARY 20.

- BRITISH PSYCHOLOGICAL SOCIETY (Industrial Section) (at National Institute of Industrial Psychology, 329 High Holborn), at 11.30.—Prof. Pear: What is meant by Skill in Industry.
- ROYAL INSTITUTION OF GREAT BRITAIN, at 3.—Dr. G. Macdonald: Roman Britain (1).
- GILBERT WHITE FELLOWSHIP (at 6 Queen Square, W.C.), at 3.—G. Avenell: A Glance at Richard Jefferies (Lecture).
- PHYSIOLOGICAL SOCIETY (at King's College).

MONDAY, FEBRUARY 22.

- ROYAL IRISH ACADEMY (Dublin), at 4.15.
- ROYAL SOCIETY, EDINBURGH, at 4.30.—Rev. T. C. Gordon: The Finding of the Galilee Skull.—Prof. A. Robinson: A Scientific Description of a Neanderthal Skull found in Galilee, from a Cast.
- INSTITUTE OF ACTUARIES, at 5.—C. R. V. Coutts: On the Distribution of Life Office Profits.
- ROYAL COLLEGE OF SURGEONS OF ENGLAND, at 5.—Sir Arthur Keith: Fossil Remains of Ape and Man (1): The Taungs Anthropoid: its Zoological and Geological Position.
- FARADAY SOCIETY (at Chemical Society), at 5.30.—Prof. A. J. Allmand and R. H. D. Barklie: The Influence of Alternating Currents on the Electrolytic Corrosion of Iron.—A. N. Campbell: The Direct Oxidation of Manganous Ion to Permanganate.—H. J. Poole: The Elasticity of Jellies of Cellulose Acetate in Relation to their Physical Structure and Chemical Equilibria.—F. G. Tryhorn and W. F. Wyatt: Adsorption II. The Adsorption by a Coconut Charcoal of Saturated Vapours of some Pure Liquids. Adsorption III. Stages in the Adsorption by a Coconut Charcoal from the Saturated Vapour over Liquid Mixtures of Alcohol and Benzene and of Acetone and Benzene.—I. R. McHaffie: A Device for Circulating Fluids under High Pressure.
- BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES (at Bedford College for Women), at 5.30.—Prof. J. Johnstone: The Organism and its Environment (Lecture).
- INSTITUTE OF ELECTRICAL ENGINEERS (Informal Meeting), at 7.—A. F. Harmer and others: Discussion on Some Changing Characteristics in the Application of Electricity to Public Supply.
- INSTITUTE OF ELECTRICAL ENGINEERS (North-Eastern Centre) (at Armstrong College, Newcastle-upon-Tyne), at 7.—J. L. Thompson and H. Walsley: Notes on the Testing of Static Transformers.
- INSTITUTE OF STRUCTURAL ENGINEERS (Midland Counties Branch) (at Birmingham), at 7.30.—H. F. Lea: Arterial Road Construction.
- ROYAL SOCIETY OF ARTS, at 8.—Dr. G. W. C. Kaye: The Production and Measurement of High Vacua (Cantor Lectures) (2).
- ROYAL SOCIETY OF MEDICINE (Odontology Section), at 8.—Sir Frank Colyer: Abnormal Teeth from the Region of the Premaxilla.
- RAILWAY CLUB (at 65 Belgrave Road), at 8.15.—B. M. Bazley: Development of the Railway Carriage.
- ROYAL GEOGRAPHICAL SOCIETY (at Æolian Hall), at 8.30.