

## Societies and Academies.

LONDON.

**Linnean Society, March 4.**—E. Heron-Allen: The iconography of a myth. The legend that the stalked barnacle, *Lepas anatifera*, upon trees overhanging the water, or upon rotten timber, and, at maturity, produces a goose or duck, permeates scientific literature from the eleventh to the seventeenth centuries, and since the invention of printing has been fancifully illustrated. The myth appears to have passed current in the Near East in 1000 B.C., and is illustrated upon Mykenæan pots.—C. J. Stubblefield: Notes on the development of the trilobite, *Shumardia pusilla* (Sars). A large number of complete specimens have been collected, ranging in length from 0.24 mm. in the earliest or 'Protaspid Period' to 4.91 mm. in the latest or 'Holaspid Period.' The six thoracic segments are released one by one from dorsal fusion in the posterior shield or 'transitory pygidium.' *S. pusilla* offers new evidence in favour of the hypothesis, advanced by Beecher in 1896, that the growing point of the new segments in trilobites was in front of the most posterior or anal segment.—H. Graham Cannon: On the post-embryonic development of the fairy shrimp (*Chirocephalus diaphanus*). The development of *Chirocephalus diaphanus* is essentially similar to that of *Estheria*. Coelomic sacs are formed as in the latter, but do not attain any considerable size owing to the precocious development of the pericardial cavity. The method of heart-formation differs in different parts of the body. The development of the maxillary gland shows no essential differences from that of *Estheria*. The antennal gland shows very clearly, between end sac and duct, a sphincter consisting of three cells connected directly to the cuticle. The musculature is more complex than that of *Estheria*, there being a series of 'connective muscles' between the dorsal and ventral longitudinal muscles. The dorso-ventral muscles, the proctodæal dilators, and probably the stomodæal dilators are of ectodermal origin.—H. W. Pugsley: Further notes on *Fumaria* and *Rupicapnos*. The material, largely the fruit of recent French botanical expeditions into parts of Morocco hitherto unexplored, has yielded some new species both of *Fumaria* and *Rupicapnos*. New forms were also discovered in Algeria during a visit to that country in 1922.

**Geological Society, March 10.**—J. E. Marr: The Pleistocene deposits of the lower part of the Great Ouse Basin. A period of aggradation in Lower Palæolithic times intervened between two periods of glaciation of the district, and after the second glaciation, erosion occurred, with minor periods of aggradation in Upper Palæolithic times. An appendix by A. S. Kennard and B. B. Woodward deals with the non-marine mollusca.—W. G. Woolnough and Sir T. W. Edgeworth David: Cretaceous glaciation in Central Australia. Evidences of glacial action in Central Australia were recorded more than forty years ago, mostly in the form of numerous erratics and occasional beds of tillite. The occurrences are now known to belong to two distinct geological horizons, the older almost certainly Permo-Carboniferous, and the newer probably Jurassic to Cretaceous-Tertiary. Recently, one of the authors (W. G. W.), when exploring the salt-lakes of Central Australia on behalf of Brunner, Mond and Co., discovered good evidence as to the age of the later glaciation. The most recent expedition (by W. G. W.) has led to the discovery by him of marine fossils in the same matrix as that in which the erratics are embedded. The

erratic-bearing beds, together with a thick series of freshwater strata with lignites, which mostly overlie the glacial deposits, are termed the Winton Series. They are followed by strata making locally a distinctly unconformable junction with them and probably of early Tertiary age. These latter beds belong to the Eyrian Series, which in places carries fossil leaves of *Eucalyptus*. F. W. Whitehouse opines that the age may approximate to Albian. If so, it would accord with the New Zealand evidence of a great orogenic movement in those islands soon after the close of Neocomian time. It is suggested that the crust-movements, which were orogenic in New Zealand, expressed themselves as epeirogenic uplifts in Australia and accounts for the fact that the Cretaceous Mediterranean of Australia gave place soon after the close of Aptian time to a vast freshwater lake: for marine sedimentation, although in places represented by small patches of Albian, mostly ceased even before Albian time.

**Physical Society, March 12.**—A. H. Davis: The analogy between ripples and acoustical wave phenomena. The analogy between cylindrical sound waves and waves on the surface of a liquid is studied. For inviscid media, as regards velocity potential, the differential equations are similar provided the disturbance is small and is harmonic in type. The effect of moderate viscosity is of the same type for sound waves and for surface waves; it is most marked for short wave-lengths, and it decreases amplitudes without appreciably altering the wave-length. Viscous effects are generally negligible in the case of sound, but they are appreciable for the water waves that would usually be used in a small ripple tank not greater than, say, 10 feet in size. Mercury waves are much less affected by viscous damping than water waves. Experiments with model obstacles in a ripple tank show that the effects of the meniscus around the obstacle and of the amplitude of the source are not important. When the water becomes stale on exposure—and presumably contaminated—the relative distribution of ripples around obstacles is appreciably modified, but not to an extent which would correspond to any very marked change in the loudness of a sound. Experiments have also been conducted using an impulsive disturbance instead of a maintained train of waves. When it is recognised that a sound pulse travels out singly, whereas with ripples subsidiary wavelets accompany the main pulse, the correspondence between ripple photographs and sound pulse photographs is most striking.—R. M. Archer: On the evaporative losses of vacuum-jacketed vessels of the Dewar type. The evaporative losses of metal Dewar vessels are discussed, and particulars given of experiments made by the author in Oxygen Laboratory of the Air Ministry. The separation of neck and radiation losses is described, and also a method of testing adsorbents under working conditions.

CAMBRIDGE.

**Philosophical Society, March 15.**—A. Sommerfeld: Some controversial points in the theory of spectra. (Lecture.)—J. A. Crowther: A theory of the action of X-rays on living cells.

MANCHESTER.

**Literary and Philosophical Society, March 9.**—G. Elliot Smith: The brains of apes and men (Wilde Memorial Lecture). Without the cultivation of manual dexterity, which involves the aptitude to learn by experimentation, man's ancestors could not have acquired the seeing eye and the understanding

ear. Man's intellectual pre-eminence is based upon his ability really to see the things and events around him, to understand something of their significance and to appreciate their aesthetic qualities. Vision became also the chief instrument for determining his sexual selection and affecting his social behaviour in an infinite variety of ways. But it affects human thought and action in much more subtle and obtrusive ways. Apart altogether from the phenomena of consciousness, it helps unconsciously in controlling posture and regulating the tone of muscles, a function upon the effective performance of which skill is so largely dependent. The attainment of the erect attitude in the human family was intimately bound up with the increasing influence of the eyes and the cerebral cortex in the control of posture. The special interest of the apes' brains is that they provide the evidence to help us to get some idea of how vision acquired its ascendancy. The casts obtained from the brain-case of extinct members of the human family—in particular those of *Pithecanthropus*, *Eoanthropus*, and the Rhodesian man—provide important evidence in confirmation of the fact that the processes of growth and elaboration of the brain, which can be studied in the lowlier primates, were continued within the human family itself. Moreover, they agree with the order of development of the cerebral cortex revealed in the brain of the modern child. The real importance of the interesting fossil ape found at Taung in 1924 is that it reveals the earliest stage in this process of cerebral development and facial refinement.

## PARIS.

Academy of Sciences, March 8.—A. Lacroix: The classification of leucite rocks: the types of the syenite family.—C. Matignon and J. Cathala: The action of phosgene on glucina. The work described by the authors in a recent communication was anticipated by Ed. Chauvenet in 1911.—Ch. Moureu, A. Lepape, H. Moureu, and M. Geslin: The composition (ordinary and rare gases) of the gases spontaneously evolved from some thermal springs of Madagascar and Réunion. Of the eleven waters examined, eight were from Madagascar, and all except one consisted mainly of carbon dioxide. All contained argon, but only one, from Ranomafana, contained appreciable proportions of helium (0.56 per cent.). The gases evolved were very similar to those obtained from the bicarbonate springs of the Central Plateau in France. This was rather unexpected, since the subsoil in the Antsirabé basin, from which seven out of eight of the Madagascar samples were obtained, is rich in radioactive minerals (betafite, euxenite, etc.), and consequently rich in helium.—Léon Guillet and Jean Cournot: The influence of thermal treatment on some silver alloys. A study of silver-zinc and silver-cadmium alloys. The alloys with zinc show very clearly the increase of hardening by reheating, in this resembling duralumin: for the silver-cadmium alloys the results are less evident.—R. de Forcrand: The action of thallium on alcohols or on dilute acids and on water and ethyl alcohol in excess. Thermochemical determinations.—Jean Baptiste Senderens: The etherification of the aromatic alcohols. Study of the conditions under which sulphuric acid can convert benzyl, phenylethyl (primary and secondary), and cinnamic alcohols into the corresponding ethers.—R. Swyngedaauw: The velocity of the slack and taut fibres of a belt.—J. Ottenheimer and R. Dubois: A wave preceding the explosive wave.—Marcel Laporte: The measurement of the mobility of ions in gases. The method is

analogous to that used by Fizeau for measuring the velocity of light. Experiments were conducted with air, oxygen, nitrogen, carbon dioxide, and argon. For all these cases it is necessary to conclude that there exist ions of different mobilities, the values of which are comprised between two clearly different limits. Values given by other experimenters fall between these limits.—Max Morand: Study of the working of a positive ray tube.—G. Ribaud: The influence of the external temperature on the temperature of standard pyrometric lamps.—R. de Fleury: Pistons of aluminium, alpac, and magnesium.—W. Perschke: The study of triboluminescence.—P. Job: The spectrographic study of trihalogen salts of potassium. The method described has indicated the existence of  $KI_3$ ,  $KBr_3$ ,  $KBrI_2$ ,  $KClBr_2$ , and  $KClI_2$ .—A. Bigot: Kaolins, clays, etc. Formation of the clay schists of the coal measures.—Clément Duval: Preparations of the nitrite of *cis*-dinitrotetrammine and of some bodies derived from it.—Lespieau: The action of acrolein on the mixed dimagnesium derivative of acetylene. One of the products of this reaction is a new pentenol  $CH\equiv C-CH(OH)-CH=CH_2$ , the physical and chemical properties of which are described.—Marcel Guerbet: The asymmetric dialkylarsinic acids and, in particular, methylethylarsinic acid.—Mlle. Y. Brière: The existence of uraninite (pitchblende) in certain pegmatites from Madagascar. Although many radioactive minerals have been found in Madagascar, this is the first occasion of finding pitchblende.—M. Koyitch: The existence of leucitic lavas in southern Serbia.—A. Demay: The tectonic significance of lustrous gneiss of the Pilat massif, near Saint-Etienne.—Ch. Maurain: Magnetic measurements in the west of France.—Jean des Cilleuls: The phytoplankton of the Loire.—V. Lubimenko: The physiological rôle of the starch deposited in the green parenchyma of leaves.—H. Lagatu and L. Maume: The diagnosis of the food of a plant by the chemical evolution of a suitably chosen leaf.—A. Dognon: The biological action of X-rays of different wave-lengths. Reply to a criticism by M. Dauvillier.—P. Petit and Richard: The mechanical liquefaction of starch paste.—M. Bridel and C. Béguin: The action of emulsin from almonds on *l*-arabinose in solution in ethyl alcohol of different strengths.—G. Guittonneau: The microbial oxidation of sulphur. Further experiments confirming the view put forward in an earlier communication that the first product of the oxidation of sulphur in soil by micro-organisms is a thiosulphate.—Georges Truffaut and N. Bezsonoff: The influence of metallic aluminium on the activity of nitrogen-fixing bacteria. Larger proportions of nitrogen are fixed in the presence of metallic aluminium.—M. Marage: The defence of the organism against medicaments.—Roucaÿrol: The action of diathermy in blennorrhagia.

## VIENNA.

Academy of Sciences, February 4.—G. Stetter: (Communication of the Radium Institute, No. 181.) The determination of the ratio charge to mass for natural H-rays and atomic fragments from aluminium. (No. 182.) The components of the  $K\beta_1$  line of iron.—K. Przi Bram: On the interpretation of the colour changes in salts; preliminary communication dealing with colours of alkali haloid crystals.—P. Weiss: (Communication of the Biological Experiment Institute of the Academy of Sciences in Vienna, No. 128.) The origin of the skin in regenerated extremities of *Triton cristatus*.—L. Abolin: (Communication of Biological Institute, No. 129.) In-

fluence of chemicals on the colour changes of fishes. The influence of central and peripheral nerve-poisons on the whole chromatophore system of the minnow, *Phoxinus laevis*. Strychnine and other poisons produced a darkening of the fish due to expansion of the melanophores.—R. Müller, F. Griengl and J. Mollang: The electro-chemistry of nonaqueous solutions (vii.). Conductivity measurements in dilute solutions of silver nitrate in twelve organic solvents and determination of the limits of molar conductivity.—M. Eisler and L. Portheim: Further researches on hæmagglutinines in plants. Extract of the ripe seeds of *Phaseolus multiflorus* has the power of coagulating red blood corpuscles. Hæmagglutinin also occurs in seeds of *Ricinus communis*, seeds of *Datura Stramonium* and tubers of artichoke, *Helianthus tuberosus*.—V. Oberguggenberger: Earth current observations in the mountains.—F. E. Suess: The structure of variscic primitive rocks.

February 11.—T. Kautz: (Radium Institute, No. 183.) Determination of the half period of radium D by measuring the heat evolved by an old radium preparation.—E. Rona: (Radium Institute, No. 184.) Determinations of the absorption and range of natural H-rays.—E. Gebauer-Fülnegg and Riess: Quinone-sulphur-imines.—C. Diener: The fossil deposits in the Hallstätter limestones of the Salzkammergut.—L. Kober: New contributions to the geology of the eastern Tauern and the Salzkammergut.

February 18.—J. Lense: Special ametric manifolds.

#### WASHINGTON.

**National Academy of Sciences** (Proc. Vol. 12, No. 2, February).—Charles E. St. John: The red shift of solar lines and relativity. The general displacement of spectral lines towards the red required by relativity is found, but there are noteworthy discordances between theoretical and observed values. The deviations are correlated primarily not with intensity but with the level in the sun's atmosphere at which the lines in question are produced. Generalised relativity provides a general displacement due to the slowing-up of the atomic clock. The Doppler effect, due to radial movements in the solar atmosphere, explains systematic deviations of high- and low-level lines. Differential scattering, owing to the longer path in the solar atmosphere traversed by light from the limb, accounts for the increased displacement of lines from the limb (limb effect).—G. W. Keitt: Some relations of environment to the epidemiology and control of apple scab. Apple scab (*Venturia inaequalis* (Cke.) Winter) has been studied in the field and under controlled conditions. In Wisconsin, the fungus winters in infected leaves on the ground and in spring ascospores are shot out and carried by air currents to the trees, where infection is spread by conidia. The optimum temperature for infection and ascospore germination is about 20° C. Fluctuations in humidity have little effect. Sulphur fungicides are most effective against scab.—E. O. Salant: Infra-red absorption of the N-H bond. Examination of a series of symmetrical dialkyl and trialkyl amines indicates that the N-H bond has a characteristic fundamental vibration frequency varying between wave-numbers 1400 and 1700, according to the other atoms in the molecule.—F. R. Bichowsky and H. C. Urey: A possible explanation of the relativity doublets and anomalous Zeeman effect by means of a magnetic electron. It is assumed that the electron is a charged magnetic doublet of the magnetic moment of half a Bohr magneton and the perturbing effect of other electrons is neglected. Half-quantum numbers are adopted, the total magnetic moment of an atom

being assumed to be contributed half by the electron rotating on itself and half by its rotation round the nucleus.—F. Zwicky: Theory of the specific heat of electrolytes.—T. Lyman and F. A. Saunders: The spectrum of neon in the extreme ultra-violet. Lines between  $\lambda 630$  and  $\lambda 590$  appear to be due to normal neon (Ne I); the spectrum of ionised neon (Ne II) extends to  $\lambda 430$ .—Arthur J. Dempster: The free path of protons in helium. Protons accelerated through 900 volts potential difference pass freely through atoms of helium with only slight changes in velocity or direction. It is suggested that these protons, having much smaller velocities than the electrons in the atom, cause only a slow modification of the electronic orbits without producing permanent disturbance or ionisation.—W. M. Davis: Subsidence rate of reef-encircled islands. The formations in the open Pacific support the view that reef upgrowth occurred on foundations which subside at (1) a slow rate which can be counterbalanced by lagoon aggradation as well as by reef upgrowth, or (2) at a rapid rate which cannot be counterbalanced. Reef upgrowth is slower than coral upgrowth.—H. S. Vandiver: Summary of results and proofs concerning Fermat's last theorem.—G. V. Rainich: Mass in curved space-time. In the general relativity theory, the electric charge appears as a residue of a field derived from the curvature field; an expression of the type of a residue is obtained for mass in the centrosymmetric case. This mass constant appears to be connected with the complete Riemann tensor, and it seems that, in order to introduce mass, it is necessary to separate space and time.—Aristotle D. Michal: Concerning certain solvable equations with functional derivatives.—Joseph Miller Thomas: First integrals in the geometry of paths.—Luther Pfahler Eisenhart: Einstein's recent theory of gravitation and electricity. Equations which should replace Maxwell's equations are obtained in tensor form.—Oliver R. Wulf: Evidence for the existence of activated molecules in a chemical reaction. The heat of reaction when ozone decomposes does not afford sufficient energy for the excitation of the radiation emitted. This radiation agrees closely with the emission spectrum of ozone molecules, suggesting the presence of activated ozone molecules.—John J. Abel: Crystalline insulin. An insulin solution (40 rabbit units to the milligram) is taken up in acetic acid, and impurities are precipitated with brucine and removed. Treatment of the clear liquid with pyridine give a crystalline precipitate. Larger crystals are obtained by recrystallisation from disodium hydrogen phosphate. Amounts so small as 0.01 mgm. per kilo of the crystalline substance reduced the blood sugar of rabbits to the convulsive level.

#### Official Publications Received.

Union of South Africa. Department of Mines and Industries: Geological Survey. Memoir No. 23: The Economic Geology of Sabie and Pilgrims Rest. By W. J. Wybergh. Pp. 124+5 plates. (Pretoria: Government Printing and Stationery Office.) 5s. 6d.

Legislative Assembly, New South Wales. Report of the Director-General of Public Health, New South Wales, for the Year 1924. Pp. v+191. (Sydney: Alfred James Kent.) 8s. 3d.

Ministero dell' Aeronautica: Aviazione civile e traffico aereo. Ufficio presagi. Annuario 1926. Pp. 142. (Roma.)

Department of the Interior: Bureau of Education. Bulletin, 1925, No. 28: Statistics of Teachers Colleges and Normal Schools, 1923-1924. Pp. 60. 10 cents. Bulletin, 1925, No. 35: Review of Educational Legislation, 1923-1924. By William R. Hood. Pp. 22. 5 cents. (Washington, D.C.: Government Printing Office.)

Aeronautical Research Committee. Reports and Memoranda, No. 984 (Ae. 196): The Representation of Aircraft Performance Tests, using Non-Dimensional Variables, with special reference to the Prediction of the Effects of Change of Loading on Performance. By R. S. Capon. (A.4, a Full Scale Work—Aeroplanes general 125—T. 2098 and A.) Pp. 7+2 plates. (London: H.M. Stationery Office.) 4d. net.