

## Societies and Academies.

## LONDON.

**Geological Society**, April 22.—W. L. F. Nuttall: The stratigraphy and palæontology of the Laki series (Lower Eocene) of parts of Sind and Baluchistan (India). Some of the massive white foraminiferal Eocene limestones of Sind, with a thickness of about 600 feet, found along the Laki Range and in Lower Sind, contain a different and earlier fauna of Foraminifera than that of the Kirthar series as exposed in the Kirthar Range. In the area near Meting the following divisions in the Laki series are proposed: Laki Limestone, Meting Shales, Meting Limestone, Basal Laki Laterite. The term *Alveolina* Limestone is discarded, as *Alveolinae* are found in both the Laki and the Meting Limestones. The Meting Limestone is correlated with the Dughan Limestone of R. D. Oldham, which is found in the Bolan Pass and other places in Baluchistan. The Ghazij Shales of Baluchistan, which are absent in Sind, pass up conformably into the Lower Kirthar series. The upper part of these shales is younger than the Laki Limestone. In Sind the Laki Limestone is overlain unconformably by the Middle Kirthar, Nari (Oligocene), or Lower Manchar (Pliocene) beds. The Laki series rests unconformably on the Upper Ranikot, with the upper members of the Laki series as traced northwards overlapping the lower. The fauna of the Laki series, which is different from that of the Kirthar series, suggests that the former are of Lower Eocene age rather than Lower Lutetian, as has hitherto been supposed.

**Linnean Society**, May 7.—H. G. Cannon: The ectodermal origin of muscles in the crustacean, Chirocephalus. In the trunk region of a metanauplius of Chirocephalus the limbs appear at first as pouch-like outgrowths, the ectoderms between them forming a series of ridges projecting into the body-cavity. The inner edges of the ridges become nipped off from the more lateral ectoderm forming a string of cells containing deeply-staining fibrils. Later, dorsally and at the level of the inner face of the surrounding ectoderm cells, the fibrils lose their staining capacity and are replaced by a tendinous plate. Below this plate the fibrils divide into segments, converting the strings of cells into typical striped muscles. These muscles do not appear to correspond to the larval mesoderm of annelids.—Miss I. Andersson: The genetics of variegation and leaf-structure in ferns. Spores being sown on Knop-agar, the several kinds of prothallia could be counted and observed continuously. Segregation in respect of green or pale plastids may occur (1) at reduction, (2) during the prothallial growth, or (3) in somatic tissue of the sporophytes, or in any of these stages successively.—S. L. Moore: New species of *Compositæ* from Angola Land.

## DUBLIN.

**Royal Dublin Society**, April 28.—H. H. Poole: The photo-electric measurement of submarine illumination. A method is described of using photo-electric cells for submarine photometry which may be employed in a comparatively small vessel at sea in fine weather. The photo-electric current is passed through a known high resistance, the P.D. between the ends of the latter being balanced against a potentiometer. A telephone is used as a detector instead of a galvanometer, thus rendering a steady support unnecessary. This is effected by including a special form of inter-

rupter in the detector circuit of the potentiometer. This circuit also includes the primary of a two-valve amplifier, the output terminals of which are connected to the telephones. A vacuum photo-electric cell is used as a standard, the submarine illumination being measured by a cell of the Kunz type. The effects of obliquity of illumination and of reflection losses at the photometer window are specially considered. Preliminary tests have given satisfactory results.

**Royal Irish Academy**, May 11.—Miss A. L. Massy: An account of the Brachiopoda taken by the fishery cruiser *Helga* off the Irish coast, with a summary of previous Irish records. Eleven species are recorded, two from depths of more than 1000 fathoms, seven between 70 and 700 fathoms, and two from shallow water.

## EDINBURGH.

**Royal Society**, May 11.—F. A. E. Crew: Unilateral vasoligation on the senile male of the domestic fowl. Unilateral vasoligation in the fowl is not followed by rejuvenation phenomena. This suggests that the gonad of the bird is not endocrinologically equivalent to that of the mammal.—Miss Sheina M. Marshall: Plankton of the Firth of Clyde. Notes of the species occurring and their seasonal distribution.—Miss Frances M. Ballantyne: The continuity of the vertebral nervous system: Studies on *Lepidosiren paradoxa*. Numerous stages in the development of sensory nerve trunks (olfactory, auditory, spinal, lateral line), demonstrate that each trunk develops out of a protoplasmic bridge joining end organ and central nervous system at an early period of development while they are still in close proximity. The relations between neurofibrils and ganglion cells was dealt with and evidence adduced in support of the view that there is no real discontinuity at the so-called synapse.—E. B. Bailey: Perthshire tectonics: Loch Tummel, Blair Atholl, and Glen Shee. The stratigraphical sequence of the district shows only minor variations from that worked out by E. M. Anderson at Schiehallion, farther west (Quart. Journ. Geol. Soc., 1923). One of the main stratigraphical divisions, the Perthshire Quartzite Series, is disposed in three distinct recumbent fold-limbs of great cross-strike extent. Of these, the Cairnwell Limb is top, the Tummel Limb is middle, and the Ben y Cloe Limb is bottom. Important slides have been developed, more particularly in connexion with the Tummel Limb. Subsequent recumbent folding has greatly affected the Tummel Limb and digitations of the Cairnwell Limb.

## PARIS.

**Academy of Sciences**, May 4.—The president announced the death of M. Albin Haller.—E. Goursat: Some partial differential equations of the theory of deformation of surfaces.—G. Bigourdan: The equations, of various origins, which may affect the pendulum corrections employed at the Bureau International de l'Heure (B.I.H.) during the five years 1920-1925. The corrections are affected by various errors due to different causes; five years' observations are discussed and an attempt is made to separate some of these causes of error.—Nicolas Kryloff: The estimation of the error made in the application of the method of W. Ritz for the approximate integration of differential equations.—N. Lusin: A problem of M. Émile Borel and the projective ensembles of M. Henri Lebesgue; analytical ensembles.—V. Romanovsky: The distribution of the mean square errors in observations on quantities

with normal distribution.—R. Dugas: The theory of fine structure and the principle of the equality of action and reaction.—L. Escande and M. Ricaud: The similitude of viscous fluids. Comparative experiments made with water and three oils of different viscosity. Reynolds's law held exactly, and the simultaneous application of the law of Reynolds and that of Reech showed that, giving to the homologous dimensions of two models a ratio equal to the ratio of the kinematic viscosity coefficients raised to the power  $2/3$ , similitude was realised.—Henri Abraham and René Planiol: Magnetic sesquioxide of iron. Ordinary ferric oxide (colcothar) is not ferromagnetic. If a non-magnetic ferric oxide is reduced at  $500^{\circ}\text{C}$ . in hydrogen or in carbon monoxide, the reaction stops at about the stage of magnetite. This finely divided magnetite is not pyrophoric but is readily oxidised. If heated in air it burns like tinder and gives a non-magnetic red oxide; but if heated in a current of air at  $200\text{--}250^{\circ}\text{C}$ ., oxidation is produced slowly and without incandescence. The resulting oxide is brown, has the same chemical composition as ordinary red ferric oxide, but is strongly ferromagnetic. Heated to  $700^{\circ}\text{C}$ . it is transformed into the non-magnetic red oxide.—Jean Jacques Trillat: Study of the fatty acids and the dicarboxylic acids by means of the X-rays. A slight alteration in technique, namely, dissolving the acid in alcohol, pouring some drops of the solution on a glass plate and allowing to evaporate, gives better results than the original method of pouring the melted acid on the plate. The thin layer behaves as a single crystal, and the X-ray spectrum shows only the fine lines corresponding to the length of the chain. Data are given for six fatty acids and four dibasic acids. The method can be applied in analysis, and will distinguish between a  $\text{C}_{17}$  acid and a mixture of  $\text{C}_{16}$  and  $\text{C}_{18}$  acids.—Salomon Rosenblum: A new determination of the ratio of the velocities of the two groups of  $\alpha$  rays emitted by the active deposit of thorium. The ratio of the velocities of the  $\alpha$  rays of thorium ( $\text{C}$  and  $\text{C}'$ ) is found to be  $1.209$ , with a possible error of  $0.1$  per cent.—Th. De Donder: Affinity.—A. Boutaric and Mlle. G. Perreau: The quantitative study of the protection realised in a colloidal solution by the introduction of an electrolyte in a quantity too small to produce flocculation. Studies of colloidal suspensions of gamboge and sulphide of arsenic. The results are given in the form of curves.—Léon Guillet: The thermal treatment of certain nickel brasses.—Fred Viès and Mlle. Madeleine Gex: The ultra-violet absorption as a function of  $\text{P}_n$  of some organic acids considered as ultra-violet indicators.—E. E. Blaise and Mlle. M. Montagne: The preparation of the acyclic  $\delta$ -diketones. By the condensation of ethyl magnesium bromide with the tetrathyldiamide of glutaric acid, the  $\delta$ -diketone dipropionylpropane has been shown in an earlier communication to be one of the reaction products. It is now shown that the diethylamide of  $\gamma$ -propionylbutyric acid and a ketone of the constitution  $\text{C}_2\text{H}_5 \cdot \text{CO} \cdot (\text{CH}_2)_2 \cdot \text{C}(\text{C}_2\text{H}_5)_2 \cdot \text{N}(\text{C}_2\text{H}_5)_2$  are also produced in this reaction.—Lespieau and Charles Prevost: The hexabromide of diacetylene. The addition of bromine to diacetylene gives a hexabromide identical with that obtained by Noyes from the gas obtained by treating slightly oxidised copper acetylide with acid. From the hexabromide the diacetylene is easily regenerated by the action of zinc powder and alcohol.—Marcel Sommelet: The synthetic preparation of the homologues of benzyl chloride. The synthesis is based on the interaction of monochlormethyl ether and an aromatic hydrocarbon in the presence of stannic chloride as condensing

agent.—R. Lantz and A. Wahl: The 1-arylamino-2-naphthoquinones.—L. Cayeux: The relative age of the silex and dolomites in the chalk of the Paris basin.—Louis Besson: The pluvial capacity of the equatorial current. The periodic factor of climate.—E. Demoussy: The changes in concentration brought about by diffusion.—St. Jonesco: The combined action of hydrochloric acid and metallic sodium on the reddening of a flavone extracted from the red leaves of *Prunus pissardi*. The flavone, resembling quercetin in its behaviour to solvents, is attacked by metallic sodium, and the product of this reaction on treating with hydrochloric acid gives a red pigment. The latter does not appear to be a simple reduction product of the flavone, since other reducing agents do not produce the colouring matter.—Auguste Lumière and Henri Couturier: The ant-coagulating action of zinc salts. Sulphate of zinc, in a concentration of  $1$  in  $2000$ , completely prevents the coagulation of blood *in vitro*. Injection of the same salt into the living animal also has the effect of reducing the coagulability of the blood.—Mme. Randoin and E. Lelesz: Comparative variations of arterial glycaemia (effective and proteidic) and of the proportion of liver glycogen in the normal pigeon and in the pigeon submitted to a diet lacking in the water-soluble factor B. A deficiency of factor B does not prevent addition of the glycogen reserve nor does it prevent the sugar being set free in the blood, but the animal is deprived of a substance which is directly or indirectly indispensable to the combustion of the sugar.—P. H. Fischer: The rôle of the purple-producing gland of Murex and Purpura.—P. Cappe de Baillon: Double monsters in the phasmids.—L. Fage and R. Legendre: Swarms of *Scalibregma inflatum* observed while fishing with artificial light.

May 11.—Mlle. Madeleine Marquis, Pierre Urbain, and G. Urbain: The treatment of malacon. The separation of cerium from zirconium. Solution is effected by treatment with sulphuric acid followed by potassium bisulphate fusion; the zirconium and cerium are precipitated as double sulphate by addition of solid potassium sulphate. An account is given of various methods tried for the separation of these two elements. Fractional precipitation with saturated solutions of sodium carbonate has been found to give the best separation.—Gabriel Bertrand and M. Machebœuf: The presence of nickel and cobalt in animals. It has been shown that nickel and cobalt are widely distributed in arable earth and are also present in plants; nickel has now been proved to be present in animal tissues. In man and the higher animals the highest proportion of nickel is present in the liver. The amounts are extremely small, ranging from  $0.004$  milligram of nickel per kilogram of cow's milk to  $0.455$  milligram per kilogram in molluscs.—Paul Mentré: The projective properties of congruences, non  $W$ , with non-special complex linear osculator.—André Roussel: Semi-continuity and direct search for certain minima.—E. Henriot and E. Huguenard: The realisation of very high speeds of rotation. In the apparatus described the rotating body is not in contact with any liquid or solid and is free to take up its own axis of rotation. The rotor is supported and rotated by a current of compressed air; one model has maintained a constant velocity of  $4000$  turns per second for several hours.—P. Dumanois: The utilisation of anti-knocking compounds. A mixture of equal parts of petrol and kerosene with the addition of  $1.5$  parts per  $1000$  of lead tetraethyl gave good results in an internal combustion motor; there was no knocking, and the



consumption was the same as when pure petrol was used.—R. Forrer: An artificial magnetic anisotropy of nickel. The attainment of a state with a particularly simple cycle.—Josef Mikulas Mohr: The pole effect of the barium and neodymium lines in the visible part of the spectrum. The differences in wave-length due to the pole effect were studied in the interference spectrograph of Perot, one light bundle being taken from one of the poles and the other from the centre of the arc. The differences of wave-length negative pole minus centre and positive pole minus centre are given in tabular form for the chief lines of barium and neodymium.—Mme. J. S. Lattès: A method of analysis by absorption of radioactive radiations. A general method is developed capable of being applied to the analysis of any radiation, however complex.—J. d'Espine: The magnetic spectrum of  $\beta$  rays of great velocity of radium-B+C. Measurements are given for 13  $\beta$  rays of radium-B+C. The values of  $H_p$  are tabulated against the results of Ellis, Rutherford and Robinson, and Danysz, and are in good agreement with those of Ellis.—Louis Jacques Simon: Comparative chromic acid oxidation and molecular structure; tariric and stearolic derivatives.—Raymond Delaby and Georges Morel: The methylalkylglycerols. Notwithstanding the number of transformations involved, the best method of preparing the methylalkylglycerols is through the dibromhydrin, the stages being vinylalkylcarbinol, addition of bromine forming the dibromhydrin, conversion of the latter into the diacetin, from which the glycerol is obtained by the action of aqueous potassium carbonate.—Albert Baldit: Magnetic measurements in the centre and east of France.—Ernest Esclançon: Zones of silence by reflection on the surfaces of atmospheric discontinuities.—Barré and Schnell: The propagation of sound waves in the soil. Two velocities for sound in the soil were found: 2000 and 8500 metres per second. The higher velocity was found by observers on granite, the mine being also buried in contact with rock, whilst in experiments giving a velocity of 2000 metres the observer and the mine were both on sand.—René Souèges: The embryogeny of the Lythraceæ. The development of the embryo in *Lythrum Salicaria*.—C. Charaux: Datiscine, the glucoside of *Datisca cannabina*. Datiscine has the formula  $C_{27}H_{30}O_{15}$ , and crystallises with four molecules of water. Hydrolysed with acids, it gives equal molecules of datiscetine, glucose, and rhamnose, but on hydrolysis with a ferment it gives datiscetine and rutinose.—Marc Bridel: Primeverose, primeverosides, and primeverosidase.—Raymond Hamet: The medullary cribro-vascular formations of two *Crassulaceæ*.—Lucien Daniel: New researches on heredity in the grafted Jerusalem artichoke.—A. Maige: Various methods of appreciation of the limiting level of amylogenous condensation.—A. Němec and K. Kvapil: The presence of nitrates in forest soils. Determinations of nitrate in soils of various ages under fir, pine, beech, oak, ash, and hornbeam.—F. Couturier and S. Perraud: Some properties of urea in contact with soils.—Adrien Auguet and Albert Bruno: The persistence of dicyandiamide nitrogen in a moulded calcium cyanamide, after remaining several months in the soil.—H. Labbé and B. Théodoresco: The action of insulin on the nitrogen metabolism. In a normal dog, injections of insulin are followed by an increase in the amounts of nitrogen excreted; the effect often persists several days after the injection.—Armand Dehorne: Observations on the biology of *Nereis diversicolor*.—Goris and M. Metin: The alteration of solutions of aconitine on keeping. On keeping aqueous solutions of aconitine nitrate there is a

steady loss of toxicity; the decrease is very regular, and is proportional to the time.

## CALCUTTA.

Asiatic Society of Bengal, April 1.—Hem Chandra Das-Gupta: On the occurrence of *Scylla Serrata* Forskal in the upper Tertiary beds of Hathab, Bhavanagar (Kathiawar). Fossilised specimens of the common edible crab of India have been known since 1767, but precise data regarding the locality and the age of the beds have been wanting. The sternal portion of such a fossil crab obtained from Hathab, Bhavanagar State, has been found in Miocene beds.—Kalipada Biswas: Sub-aerial Algæ of Berkuda Island. The Algæ occurred on the soil, on roofs, and on walls. Nine species are described, of which four are reported for the first time from India, and one—*Gomphospharia aponina*, var. *muwalis-Biswas*—is a new variety.—D. Majumder: Some characteristics of Kolarian songs. The songs are classed under four groups: (1) General; (2) love-songs; (3) moral songs, addressed to boys or girls; (4) miscellaneous (domestic affairs, food, etc.).—D. Majumder: On the terminology of relationship of the Hos of Kolhan. There are mainly two systems of kinship terms. One is applied to groups, the other to individuals. The latter system is of rare occurrence.—Braja Lal Mukherjee: The word "vrā" in the Rig Veda. The word "vrā" means hunter, and does not mean troop or host.—J. J. Modi: A note on the custom of the interchange of dress between males and females.

## VIENNA.

Academy of Sciences, March 12.—A. F. Sonnenschein: The homing of feelerless bees; a contribution to the sense of orientation in the honey-bee. Bees whose antennæ have been amputated find their hive and its entrance in much the same way as normal bees; the sense of smell does not seem essential for their return home.—M. Kohn and S. Grün: Bromo- and bromo-nitro-ether of pyrogallol (xii.). Communication on bromo-phenols.—M. Kohn and M. Heller: On the interchangeability of halogen atoms and of nitro groups in some nitro-halogen-phenol-ethers (xiii.). Communication on bromo-phenols.—M. Kohn and A. Rosenfeld: (1) New observations on halogen phenols (xiv.). Communication on bromo-phenols. (2) A contribution to the knowledge of the pseudo-phenols (xv.). Communication on bromo-phenols.—J. Weissenberger, F. Schuster, and R. Henke: On the molecular compounds of the phenols, the localisation of the field of force of the residual valency. On organic molecular compounds, the group  $CCl_3$ .

March 19.—R. Schumann: A contribution to the subterranean tectonic of the Vienna basin.—E. Heinricher: Cattle-grazing, a factor contributing to change of form and formation of species in plants. *Centaurea jacea*, var. *pygmaea*, an example.—K. Horovitz and J. Zimmermann: Investigations on the exchange of ions in glasses.—J. Zimmermann and J. Schneider: Characters of glasses in terms of their electromotive properties.—J. Schaffer: On extensible elastic sinews in skeletal muscles. The limits of elasticity are considered, also the case of a Paraguayan marsupial which hangs for hours by its tail from branches.—H. Handel-Mazzetti: New Chinese plants (xxxiii.).—The late G. von Niessl: Catalogue of data for determining the paths of 611 great meteors.—A. Aigner: The formation of valleys on the southern edge of the Lower Tauern.—A. Friedrich and J. Diwald: On the lignin of pine-wood.