Societies and Academies.

LONDON.

Royal Society, March 22.—L. T. **Hogben** and F. R. **Winton**: The pigmentary effector system. III.—Colour response in the hypophysectomised frog. After complete removal of the pituitary gland, the melanophores remain permanently contracted, even when the frogs are exposed to conditions which are optimum for darkening of the skin; they can be made to expand by pituitary extract, but the animals regain pallor under conditions which invariably produce darkening in the normal or partially hypophysectomised (anterior lobe alone) frog. The minimum dose of pituitary extract for melanophore expansion was compared in normal and pituitaryless frogs. The experiments provide evidence that: (1) the rhythm of colour change in normal life is correlated with fluctuating amounts of pituitary secretion, and (2) direct nervous influences do not play a significant rôle in co-ordinating pigmentary responses in Amphibia.—H. R. **Hewer**: Studies on amphibian colour change. The presence of "frayed" ends to processes and isolated granules and irregular edges to the concentrated mass of granules precludes any theories postulating amœboid movement of cell processes. This is supported by (1) irregular movements of the granules; (2) slight massing of granules towards tips of processes in dispersed phase; and (3) stained sections of skin. Adult *Rana temporaria* respond, similarly to other Amphibia, to factors of normal environment. Dryness and light background cause concentration; moisture and dark background dispersion. Low temperature causes dispersion and medium temperature concentration. Higher temperatures appear to have an intermediate effect. Neither nitrogen nor hydrogen produced any effect during three hours; carbon dioxide did not affect colour before proving toxic; oxygen produced concentration in melanophores; chlorine changes melanin granules to a red colour.—J. **Walton**: On Rhexoxylon, Bancroft: a Triassic genus of plants exhibiting a liane-type of vascular organisation. The genus Rhexoxylon was instituted in 1913 for a fossil stem from South Africa. The evidence given by certain structural details was in favour of attributing it to the Palæozoic group of polystelic arborescent plants, the Medulloseæ. The study of additional specimens from South Africa shows that the organisation of the vascular system resembles very closely that of certain modern South American Lianes, especially in the anomalous methods of secondary thickening of the axis. Histologically, the secondary wood of Rhexoxylon resembles that of the group Dadoxyla, characteristic of the southern botanical province during the latter part of the Palæozoic era. Possibly Rhexoxylon, as a specialised ecological type, bore much the same relation to the gymnospermic Dadoxylon stock as the modern Liane bears to the angiospermic group at the present day, and the occurrence of an anomalous type of vascular system in the modern Liane is an example of a repetition, in a distinct phylum, of a specialised organisation evolved in Palæozoic times. The fossil stem *Antarcticoxylon priestleyi* Seward, from South Victoria Land, Antarctica, has some of these peculiarities, and its occurrence in the Beacon Sandstone Series of Antarctica points to a probably close relationship between portions of this series and the Stormberg Series of South Africa, from which came the majority of specimens of Rhexoxylon.—G. **Hewett**: The Dusuns of British North Borneo. The Dusuns themselves claim descent from the Chinese who settled in North Borneo. The general political conditions in Asia during the thirteenth century led to the invasion of North Borneo by Kublai Khan. The Bruni tribute was transferred from Majapahit to China, and the Chinese acquired the throne of Bruni. The Bruni government based its claim to the whole territory of North Borneo on the marriage of Sultan Akhmed to the Chinese daughter of Ong Shin Ping, who was in all probability the occupant of the Bruni throne at the time. The Chinese occupation and development probably lasted some four hundred years.—M. **Tribe**: The development of the hepatic venous system and the postcaval vein in the Marsupialia. The development of the hepatic veins is subject to variation. Two venous rings of vitelline origin are transformed into a spiral vessel encircling the gut. In most genera the left allantoic vein becomes the more important and in some genera it anastomoses with the spiral vessel. The mesenteric vein is probably derived, in part, from the caudal venous ring. The postcaval is derived from three sources. The postrenal section takes origin from the paired supracardinal plexus, the renal section from the subcardinal veins, the hepatic and prehepatic sections from the vitelline veins. The azygos and lumbar veins, and the suprarenal sinusoids, are derived from the supracardinal plexus. The left suprarenal vein is the persistent left subcardinal vein.—J. **Gray**: The mechanism of ciliary movement. III.—The effect of temperature. Between 0° and 33° C. the speed of the cilia on the gills of Mytilus increases with a rise in temperature, although the amplitude remains normal. Between 34° and 40° C. there is a marked falling off in the amplitude of the beat, followed by a reduction in speed. At 40° C. the cilia come to rest in the relaxed position. At 45° C. the cilia occupy the contracted position. The temperature coefficient of movement between 0° and 32·5° C. varies from 3·1-1·92. High temperatures have a destructive effect on individual cells of the epithelium. In well aerated tissue the oxygen consumption is directly proportional to the speed of the beat between 0°-30° C. At about 30° C. the initial oxygen consumption is not maintained, due to the disintegrative effect of the temperature on the epithelium. The effect of temperature on the activity of cilia is closely parallel to its effect on cardiac muscle.—E. **Ponder**: The inhibitory effect of blood serum on hæmolysis. The hæmolytic action of saponin is inhibited by the proteins of serum, and also, to a lesser extent, by the cholesterol. The action of the bile salts is inhibited by the proteins, and by the lecithin of the serum. The inhibitory power is fairly constant in man and animals, is altered by drying the serum, and is affected by bacterial action. A quantitative study of the inhibition produced by serum shows inhibition is probably due to the formation of a loose compound between the proteins of the serum and the hæmolytic agent. The inhibitory effect of hæmoglobin on hæmolysis produced by saponin and bile salts is considered. Probably the reaction which takes place between saponin or bile salts and red cells is a chemical one of the first order.

Royal Anthropological Institute, March 13.—Mr. H. J. E. Peake in the chair.—Miss M. Edith **Durham**: "Bird Men" and kindred customs in the Balkans. On the western side of the Balkan peninsula a considerable part of the population still identifies itself with birds. Thus the Albanians call themselves Shkypetars, and derive the word from Shkyp, an eagle, and regard the killing of an eagle as unlucky. In Montenegro also there is a strong bird tradition. Here it is the "soko," the falcon. Officers address their

men as "my falcons," and Montenegrins hail each other as falcons. In the traditional ballads of the people the falcon appears as the messenger. Between the popular hero, Marko Kralyevitch, and the falcons there exists a very great friendship. In other ballads the hero actually refuses to kill a falcon on the ground that it is kin to him, and in yet another the Tsar's daughter is with child by a "bird man," who is a falcon by day and who dies when his wings are taken from him, killed by the jealous Vilas who, in their turn, fly about in the guise of swans. The falcon and the swans dwell on the mountains where the sun rises, and magic lights herald their coming and going. The tale is obviously the remains of some ancient beliefs about the sun and the birds and recalls the quaint bronze bird chariots of the sun, found at Glasinatz in Bosnia. Ballads also describe warriors of the Middle Ages dressing themselves up with eagle's tails and wings, and a print from a book on Turkey by Nicholas de Nicolay (1568) shows such a warrior. Plume-wearing is extinct, but in the Eagle dance of the Montenegrin he leaps high off the ground, flaps his arms, and yells.

PARIS.

Academy of Sciences, February 26.—M. Albin Haller in the chair.—The president announced the death of E. Ariès, corresponding member for the section of mechanics.—André **Blondel**: The calculation of the forced oscillations of an electrogenic group (or of an analogous apparatus) turning with a constant mean velocity, but submitted to periodic variations of the motor couple at the same time as an elastic resisting force variable with the angle of deviation.—M. Louis Gentil was elected a member of the section of geography and navigation in succession to the late M. L. Favé.—Boris **Delaunay**: The geometrical interpretation of the generalisation of the algorithm of continued fractions given by Voronoï.—Maurice **Lecat**: Expression of the most general determinants of a matrix as a function of the sections.—C. E. **Traynard**: Surfaces of the fourth degree with fifteen double points and singular Abelian functions.—René **Lagrange**: Varieties with zero total torsion in Euclidian space.—Stanislas **Millot**: A criterion of the probable value of certain experiments.—J. **Grialou**: The rotational, but permanent, movement of liquids possessing viscosity, when the trajectories are plane and vertical.—C. **Flammarion**: The increase of brightness of the star β Ceti. A sudden increase in the brightness of this star was notified on February 13 by Mr. Abbott from Athens. This has been confirmed by observations at Juvisy by the author.—Emile **Belot**: The collective and discontinuous evolution of stars and nebulæ.—M. **Holweck**: The optical properties of X-rays of great wave-length. Experimental evidence has been obtained of the diffraction of X-rays of a minimum wave-length $\lambda = 47$ Å (effective wave-length $\lambda = 60$ Å approx.). Evidence of the reflection of X-rays by a polished bronze surface is also given.—G. **Laville**: The propagation of electromagnetic waves, maintained along two parallel wires. The theories of Kirchhoff and Lord Kelvin appear to explain the phenomena of propagation as exactly as the more complicated theories of Sommerfeld and M. Mie.—V. **Ylöstalo**: The measurement of high-frequency coefficients of self-induction.—H. **Copaux** and Ch. **Philips**: The heat of oxidation of glucinum. A correction of an earlier result; the new figure is 131·3 calories in place of 151·5 calories.—Paul **Riou**: The velocity of absorption of carbon dioxide by ammoniacal solutions. Curves are given showing the influence of additions of ammonium chloride, sodium bicarbonate, and sodium chloride to the solution, and of changes of temperature.—L. J. **Simon**: The action of methyl sulphate and of potassium methyl sulphate on monobasic organic acids in the absence of water. The interaction of anhydrous organic acids with these substances in certain cases may be used with advantage for the preparation of methyl esters.—A. **Roche** and V. **Thomas**: Researches on picryl sulphide. Study of the binary mixture: tolite-picryl sulphide. This explosive was extracted from German bombs: it is very stable and stands a compression of 500 kilograms per square centimetre without losing its property of detonating.—Raymond **Delaby**: The preparation of some ethers and glycidic derivatives of alkyl glycerols.—Y. **Milon**: The fauna and age of the carboniferous limestone of Saint-Segal (Finistère).—Jean **Piveteau**: The morphology of the scapular arc of the Permian reptiles of Madagascar.—Methodi **Popoff**: The respiratory system of plants. According to the generally accepted view the respiration of plants is confined to the leaves. This view leads to difficulties, and it is suggested that plants have a respiratory system presenting analogies, from the physiological point of view, with the respiratory system of animals.—Marcel **Mirande**: The proteo-lipoid nature of the sterinoplasts of the white lily. By the application of various microchemical tests the central body of the sterinoplasts has been proved to be of a lipoid nature, covered with a thin external layer of proteid material.—P. **Delauney**: New researches relating to the presence of loroglossin in native orchids. Loroglossin has been isolated, up to the present, from 17 species of native orchids belonging to five different genera.—Paul **Becquerel**: Observations on the necrobiosis of plant protoplasm with the aid of a new reagent. The reagent consists of methylene blue (2 parts), Bismarck brown (1 part), and neutral red (1 part) in aqueous solution ($\frac{1}{10,000}$). The death of the cell is accompanied by definite colour changes in the parts stained by this reagent.—G. L. **Funke**: Biological researches on plants with creeping stems.—Marc **Fouassier**: The influence of copper on the lactic fermentation. The minute traces of copper dissolved by milk in contact with that metal have a distinctly retarding influence on the growth of the lactic organism.—A. **Desgrez** and J. **Meunier**: The mineral elements of the blood.—L. **Cuénot**, R. **Lienhart**, and M. **Mutel**: Experiments showing the non-heredity of an acquired character.—Ed. **Lesné** and M. **Vaglianos**: The utilisation by the organism of the C vitamins introduced through the parents. From experiments on rabbits the authors conclude that it does not matter whether the C vitamins are introduced by ingestion or by injection, the beneficial effect is the same in either case.—A. **Pézard**, Knud **Sand**, and F. **Caridroit**: The experimental production of bipartite gynandromorphism in birds.

March 5.—M. Albin **Haller** in the chair.—G. **Urbain** and A. **Dauvillier**: The coexistence of celtium (element 72) and the yttria earths. The view of Coster and Hevesy regarding the improbability of element 72 being associated with the rare trivalent earths is said to be negatived not only by the work of the authors but also by the discovery of this element by Goldschmidt and Thomassen in malakon and in alvite.—Charles **Moureu** and Charles **Dufraisse**: Auto-oxidation: attempt to explain the mechanism of anti-oxygenisers.—André **Blondel**: Elementary calculations of the couples damping alternators with a forced regime in the theory of two reactions, when the resistances of the armature are neglected.—C. de la Vallée **Poussin**: Quasi-analytical

functions with real variables.—Ph. **Glangeaud**: The earthquake of October 12, 1922, in the Creuse and the Limousin, and some earthquakes in the north-west of the Central Massif. A map of the district over which the shocks were felt is given, showing also the lines of the faults in the geological strata. These earthquakes in the Central Massif are due to slipping along the old lines of the faults.—M. Gabriel Bertrand was elected a member of the section of chemistry in the place of the late H. Georges Lemoine. —Georges **Darmois**: The local integration of the equations of Einstein.—F. **Defourneaux**: A category of polynomials analogous with electrospherical polynomials.—N. **Abramesco**: The auto-generation of curves.—Henri **Milloux**: The growth of integral functions of finite order and their exceptional values in the angles.—Kyrille **Popoff**: The pendulum of variable length.—J. **Haag**: The interior problem of Schwarzschild, in the case of a heterogeneous sphere. —B. **Salomon**: The gyroscopic analogies of synchronous and asynchronous electrical machines and the transposition into mechanics of certain diagrams of electrotechnics.—MM. **Huguenard, Magnan,** and A. **Planiol**: An apparatus giving the instantaneous direction of the wind. This is a modified compensated hot-wire anemometer. By using this and the compensated hot-wire instrument for measuring wind velocity, both the instantaneous direction and velocity of the wind can be recorded on the same chart. Examples of such records are reproduced, and their bearing on problems of flight without motors indicated.—Jean **Chazy**: A correction derived from the theory of relativity to the Newtonian time of revolution of the planets.—J. Ph. **Lagrula**: Test of the rapidity realisable in equatorial measurements of small planets with a telescope provided with a photo-visual comparator and some additional accessories.—J. **Guillaume**: Observations of the sun made at the Lyons Observatory during the fourth quarter of 1922. The results of the observations taken on 61 days during this quarter are summarised in three tables showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—Henri **Béghin** and Paul **Monfraix**: A new gyrostatic compass. This instrument, composed of a system of three gyrostats, has been specially designed to neutralise the deviations produced by the motion of the ship.—F. W. **Klingstedt**: The ultra-violet absorption spectra of the cresols.—A. **Dauvillier**: The high frequency spectrum of celtium. Reply to a criticism by D. Coster and G. Hevesy.—André **Charriou**: The removal of acids from solution by precipitates of alumina. A study of the removal of chromic acid by aluminium hydroxide, and of the means of purifying the precipitate by washing with suitable reagents.—R. **Locquin** and Sung **Wouseng**: The preparation of various pinacones by the action of alkyl magnesium compounds on some α-hydroxy-methyl ketones. Details of a generally applicable method for preparing bitertiary α-glycols of the type $RR'C(OH)—C(OH)R''(CH_3)$.—Pauline **Ramart**: A molecular transposition in the pseudo-butyl-diphenylcarbinol series. A study of the compounds produced by the action of acetic anhydride and acetyl chloride upon the alcohol $(C_6H_5)_2 . C(OH) . C(CH_3)_3$.—Emile **André**: The separation of methyl oleate and methyl linoleate by fractional distillation. The separation is difficult, owing to the tendency of the linoleate to form polymers.—A. **Mailhe**: The decomposition of the aryl formamides. A new method of preparation of substituted ureas. The vapours of formanilide passed over finely divided nickel at 400°-410° C. give some aniline and diphenylurea. The formotoluides behave similarly. —Henri **Longchambon**: The study of the spectrum of the triboluminescence of some substances. Crystals of tartaric acid when broken give a band spectrum of nitrogen similar to that obtained from sugar. Crystals of cadmium sulphate, uranium nitrate, and fluor spar also show nitrogen bands. The light from the uranium salt, which has a colour differing from the other, shows the four green fluorescence bands of uranium nitrate.—E. **Schnæbelé**: The granites of the Champ du Feu (Vosges).—Léon **Bertrand** and Antonin **Lanquine**: The co-ordination and origin of the Pyrenees-Provençal structural units in the south-west of the Maritime Alps.—Pierre **Bonnet**: The tectonic relations of the gneiss and coal measures in the northern Morvan.—Henry **Joly**: The constitution of the Jurassic at Torrelapaja and Bordejo (Celtiberic chain, provinces of Saragossa and Soria, Spain).—E. **Bénévent**: The mistral on the coast of Nice. The freedom of Nice from the mistral is not due to its sheltered position, but to its situation with respect to the trajectories of the barometric minima.—Joseph **Lévine**: Triatomic hydrogen and meteorological depressions.—J. **Beauverie**: Influence of the rainfall during the "critical period" of wheat on the yield. Provided the rainfall during the "critical period" is below a certain amount, the yield of wheat is roughly proportional to the rainfall. —A. A. **Mendes-Corrêa**: The proportions of the limbs in Portuguese. The Portuguese, from the point of view of the proportions of their limbs, are of a clearly European type.—Henri **Piéron**: The propagation of luminous stimulation of the retina to the cerebral outer layers.—Marc **Romieu**: The histological study of the testicle of *Orthagoriscus mola*.—R. **Hovasse** and G. **Teissier**: Peridinians and Zooxanthelles.—C. **Levaditi** and S. **Nicolau**: The filtration of neurotropic ultravirus through collodion membranes. The virus of rabies, encephalitis, herpes, and neurovaccine can be filtered under pressure through collodion membranes. The filtrates vary in toxic power; not only from one membrane to another, but also according to the nature of the virus.

Official Publications Received.

Report of the Commissioner of Education for the Year ended June 30, 1922. Pp. iii+32. (Washington: Government Printing Office.)

Report of the Marlborough College Natural History Society (founded April 9th, 1864) for the Year ending Christmas, 1922. (No. 71.) Pp. 72+3 plates. (Marlborough.)

Forest Bulletin No. 51: An Investigation of certain Factors concerning the Resin-tapping Industry in *Pinus longifolia*. By H. G. Champion. Pp. 20. (Calcutta: Government Printing Office.) 8 annas.

Carnegie Institution of Washington. Annual Report of the Director of the Department of Terrestrial Magnetism. (Extracted from Year Book No. 21 for the Year 1922.) Pp. 266-309. (Washington.)

Diary of Societies.

WEDNESDAY, APRIL 4.

SOCIETY OF PUBLIC ANALYSTS AND OTHER ANALYTICAL CHEMISTS (at Chemical Society), at 8.—Dr. S. White: Physiological Standardisation.—B. S. Evans: An Investigation into the Chemistry of the Reinsch Test for Arsenic and Antimony, and its Extension to Bismuth.—Dr. G. W. Monier-Williams: The Estimation of Boric Acid in "Liquid Eggs" and other Foodstuffs.

ENTOMOLOGICAL SOCIETY OF LONDON, at 8.

FRIDAY, APRIL 6.

ROYAL SOCIETY OF ARTS (Indian Section), at 4.—G. R. Clarke: Postal and Telegraph Work in India.

PHILOLOGICAL SOCIETY (at University College), at 5.30.—Prof. W. A. Craigie: Dictionary Prospects.

INSTITUTE OF MARINE ENGINEERS, INC., at 6.—Annual Meeting.

SATURDAY, APRIL 7.

GILBERT WHITE FELLOWSHIP (Annual General Meeting) (at 6 Queen Square, W.C.1), at 2.—Sir David Prain: Presidential Address.