

Societies and Academies.

PARIS.

Academy of Sciences, July 16.—M. Guillaume Bigourdan in the chair.—V. Grignard and R. Jenkins: Mixed organo-aluminium compounds. The iodides of monoethyl- and of di-ethylaluminium. Dry ethyl iodide reacts with aluminium powder in the absence of oxygen, giving a mixture of the compounds $((C_2H_5)_2 \cdot Al I)_2$ and $(C_2H_5 \cdot Al I_2)_2$. Both compounds are spontaneously inflammable in air, and in contact with water give pure ethane.—Jacques Chapelon: The representations of an integral number by certain forms with six variables.—Enrico Bompiani: The second fundamental form of a surface.—G. Maneff: Gravitation and the principle of equality of action and reaction.—Lémeray: General conditions which must be satisfied by a theory of the universe in agreement with general relativity.—E. Tournier: A new method of calculating the power of the reciprocating steam engine.—Louis Roy: Electromagnetic waves in continuous media in motion.—Maurice Curie: The photo-electric effect and temperature.—P. Lebeau and Ch. Bedel: The estimation of carbon monoxide. The reagent recently proposed by Damiens (cuprous oxide dissolved in concentrated sulphuric acid) for the absorption of carbon monoxide is modified by the addition of β -naphthol. This addition renders the Damiens reagent more stable, and less liable to absorb oxygen.—E. Kayser and H. Delaval: Radioactivity and nitrogen-fixing organisms.

CAPE TOWN.

Royal Society of South Africa, June 18.—Dr. A. Ogg, president, in the chair.—R. S. Adamson: Preliminary note on secondary growth in some Iridaceae. Three closely allied genera, *Nivenia*, *Witsenia* and *Klattia*, possess woody stems with continued secondary growth. The secondary growth has the same general features as that described for the arborescent Liliaceae, but these plants differ in two features:—(1) The secondary bundles, or the inner ones, are very close together, often in contact. The radial arrangement of cells is obscured to a large extent. The bundles arise from a number of cambium cells. (2) In old stems the secondary tissues are arranged in zones (annual rings), a feature not previously described for monocotyledons.—Sir Thomas Muir: Note on systems of determinants with sets of deleted elements.—J. Moir: Colour and chemical constitution, Part XIX., Organic fluorescence.—S. H. Haughton: On a skull and partial skeleton of *Mesosuchus browni*, Watson. This paper contains the description of the only known complete skull of *Mesosuchus browni* from the Cynognathus beds of Aliwal North, as well as of the front half of the skeleton. The relationships of the form with *Youngina*, the *Sphenodontia*, the *Rhynchosauria*, the *Lizards*, *Howesia*, and the *Thallosauria*, are discussed, and it is concluded that *Mesosuchus* may be placed in a new family, which is called the *Mesosuchidae*, and placed in a new sub-order of *Diapsid reptiles*, the *Mesosuchia*.—C. W. Kops: A South African life table based on the European male population census. (Communicated by Prof. J. P. Dalton.) The life table is based on the census returns of 1918 and 1921, and the deaths during the years 1919–1921. The function graduated is q_x . The graduation was performed by fitting three curves to the data—a quadratic, together with an exponential function for ages 0 to 15, a first degree function, together with an exponential for ages 24 to 108, and these curves are joined by a cubic function having first order contact with each of the other curves. A Makeham graduation was also applied from age 20 to the end of the

table. Both graduations are then compared with standard tables from other countries. Graphical comparisons are also made in the case of each graduation.

ROME.

Royal Academy of the Lincei, May 18.—B. Grassi: The transmission of malaria. In some years marked discordance exists between the number of Anopheles and the intensity of the malarial epidemic, the number of malarial individuals at the outbreak of the epidemic being insufficient to justify such discordance. The amount of semilunar gametes in some localities appears inadequate to explain the epidemiology of this form of malaria, except on the supposition of a mutation of the tertian parasites or a hybridisation of the latter with the estivo-autumnal parasites. A general incongruity is observed between the abundance of the gametes and the new infections, the gametes abounding particularly in winter and spring, during which seasons the Anopheles has no opportunity of undergoing infection.—A. Russo: Mixed individuals formed from the ex-conjugants, after true conjugation in *Cryptochilum echini* Maupas, and the origin of the gametogens. These mixed individuals are shown to be differently constituted, not only from the diverse origin of the nuclei composing their nuclear apparatus, but also as regards the quantity of nuclear substance present. Of the four nuclei which go to make up this nuclear apparatus, one only assumes the sexual function for the formation of gametes.—G. Vranceanu: Stability of rolling of a disc.—M. Maggini: Distribution of the radiating power on planetary discs, determined with the interferometer. Investigation of the distribution of luminous intensity on the apparent discs of the planets Uranus and Vesta shows that, as is the case with Jupiter and Saturn, the peripheral regions are less luminous than the central ones.—F. Signore: Temperature measurements made in Lake Lucrino and in the neighbourhood of Maricello during 1922–1923.—G. Piccardi: Further observations on a thermal method for the study of gaseous systems. Experiments on a number of the more permanent gases by means of the apparatus now described give results in satisfactory agreement with the theory previously advanced.—G. R. Levi and A. Ferrari: Crystalline lattices of magnesium hydroxide and carbonate. The fundamental element of magnesium hydroxide is a parallelepiped having a rhombic base of side 3.114 \AA and an acute angle of 60° , the height being 4.735 \AA . The corresponding density would be 2.40 , which agrees perfectly with the actual values for the natural and artificial products.—O. Munerati: Artificial nocturnal illumination as a means of accelerating the phases of the vegetable cycle.—R. Perotti and F. Aureli: Ammonifying power of arable soil. The method of measuring the ammonifying power of soils by means of nutrient solutions reveals marked differences corresponding with those found in the condition of the vegetation of the soils. With "normal" soils, which exhibit an alkaline reaction, the aptitude to the micro-biochemical production of ammoniacal nitrogen usually suffices for the needs of vegetation.—R. Perotti and G. Grandis: Measurement of the nitrifying power of arable soil. The optimum conditions for the measurement of the nitrifying power of soil by the method of nutrient solutions are defined.—P. Dorello: Observations on the erectile body of the penis of the genus *Helix*.—A. Busacca: Structure of the living crystalline fibre. The protoplasm of the fibre of the crystalline lens exhibits formations of undoubted mitochondrial character. These formations being mobile, the fundamental substance of this protoplasm is not a solid hydrogel but one of some fluidity, the latter resulting from the high degree of

imbibition experienced during the development. Although it has undergone very marked differentiation, the protoplasm preserves unchanged all the attributes of true protoplasm and cannot be regarded as a metaplasmatic substance.—E. Momigliano: Behaviour of lipoids in nephropathy.

VIENNA.

Academy of Sciences, March 6.—F. Reinitzer: Researches on olive-resin.—R. Weiss and E. Freund: The action of organic magnesium compounds on phthalonitril, I.—G. Weissenberger and L. Piatti: The behaviour of creosole towards alcohol, ether, and acetone.—V. Brehm: Diagnoses of new Entomostroaca, Part III. Report from the Handel-Mazetti Expedition to China, 1914–1918, supported by a grant from the Vienna Academy of Science. New species are, *Diaptomus bidens*, Yunnan, and *D. Wallerianus*, Yunnan.—G. Jager: The lines of force in the special theory of relativity.

March 13.—F. Feigl and A. F. Lederer: On diphenyl-carbazon and its salts, also on the supposed diphenyl-carbodiazon.—J. Krames: Regular surfaces of the third order, the infinite curves of which doubly osculate the absolute conic section.

March 20.—K. Mader: On the use of the Eötvös balance with large masses at close distances.—E. Müller: A new method for combined measurements of the capillary constant and of the internal friction in viscous liquids.

April 3.—E. Heinricher: Sleeping reactions of the inflorescences of *Dimorphothera pluvialis* (L.). The principal factor in the sleeping reactions of *Dimorphothera pluvialis* is change of temperature.—D. Pettersson: On the maximum range of the particles discharged from radium C (Mitt. d. Ra-Inst's No. 163). The long-range particles assumed by Bates and Rogers to be discharged from radium C have been examined under conditions excluding the production of secondary particles. The number of particles of ranges exceeding that of the normal α -particles was found to be less than a few per cent. of the number found by these authors.—E. Landau: On the inapplicability of Pfeiffer's method in the analytic theory of numbers.—R. Weiss and J. Korczyn: (Trimethylene-triphenylmethane-triketone).—A. Merz: Investigations of elastic after-effects by an acoustic method.—M. Eisler and L. Portheim: On insulin-like substances and their action on the exchange of the carbo-hydrates (Preliminary communication). Production of an insulin like substance from seeds of *Phaseolus multiflorus*, and preliminary experiments on the influence of this substance on the exchange of carbo-hydrates in the plants.—I. Robinsohn: The colouring of the stigmata—Stigmatochromy. A morphologic-biological method for researches on flowers.—H. Handel-Mazzetti: Plantæ novæ Sinenses diagnosis brevibus descriptæ.—Fuller abstracts for the Vienna Academy of Sciences in 1923 are given in *Die Naturwissenschaften* for May 9 and May 16, pp. 372 and 394. These contain earlier papers on Triton by Weiss, on meteorology by Exner, and on cave-bears by Abel and others.

May 8.—Alois Zinke and Franz Hanselmeyer: Researches on perylene and its derivatives (Communication VI).—Alfred Wagenhofen: Contributions to our knowledge of para-orsellinic-acids. The aim of the work was the verification of the influence of the methyl-group on the retention of the carboxyl-group in many-substituted benzoic acids, for which the para-orsellinic-acid was chosen as starting-point. The nitration of the dimethyl-para-orsellinic-acid-methyl-ester led to a mono-nitro-substitution product.—Elisabeth Kara-Michailova and Hans Pettersson: Communication of the Radium Institute, No. 164. On the measurement of the relative brilliancy of

scintillations. A method is described for the determination of the relative brilliancy of scintillations and of their application for a confirmation of the particles deviating from quartz under α -particle bombardment as H-particles.—Anton Kailan and Roman Obogi: On the question of purifying glycerine from volatile fatty-acids and their esters. The addition of alkali works prejudicially on the distillation of glycerine, since it does not diminish, or does not appreciably diminish, the acid figure in the chief fraction whilst the ester figure is very strongly increased.—Kasimir Atynski: The preparation of selenides from selenium hydride and metallic salt solutions. The selenides are appreciably less stable than the sulphides.

May 14.—P. Flach: Cytological researches on vessel formation in *Cucurbita Pepo*.—Frau Dr. Helene Kurz: *Pholidopus (Achtheinus) intermedius* and *Dissonus glaber*, two new species of the family Caligidæ.

WASHINGTON, D.C.

National Academy of Sciences (Proc. Vol. 10, No. 6, June).—W. M. Davis: The formation of the Lesser Antilles. The banks on which the Lesser Antilles stand represent reef-enclosed lagoon floors, formed according to Darwin's theory of coral reefs and modified by the processes of the glacial-control theory. The scheme of development is as follows. First there is eruptive growth of a volcanic island on a subsiding foundation; subsidence continues after growth ceases and lagoon deposits increase within the up-growing barrier reef. Reef abrasion and headland cliffing occur whenever the Glacial period intervenes. The second cycle commences by upheaval or uptilting and may interrupt the first cycle at any stage. Some of the Lesser Antilles are first stage islands and some belong to the second period.—G. R. Putnam: Radio fog signals for the protection of navigation; recent progress. The radio compass is considered to be the most important instrument invented for use on shipboard since the introduction of the magnetic compass. It is used in conjunction with radio fog signals which, in the United States, consist of characteristic signals on a wave-length of 1000 metres. There are 11 such beacons in the United States waters and 12 outside. About 291 vessels now have radio-compasses or direction finding apparatus. The spark transmitters are to be replaced by tube transmitters. With the present apparatus and conditions of use, no serious error is caused by the "night" effect.—D. F. Jones: Selective fertilisation among the gametes from the same individuals. Pollen carrying a dominant factor is better able to accomplish fertilisation in a sporophyte carrying the same factor than pollen carrying the corresponding recessive factor.—W. E. Castle: The Japanese rabbit and gametic purity. The so-called "Japanese" rabbit is yellow, mottled or brindled with black. The brindling seems to depend on the formation of a mosaic type of gene, very rare in occurrence but very stable when once produced, which is due to imperfect segregation between black and yellow, themselves simple allelomorphs.—K. Sax: The nature of size inheritance. Experiments with beans show that differences in size and total yield are, to some extent, due to factors linked with qualitative factors which are subject to Mendelian inheritance. Analysing Castle's rabbit data by determining partial correlations with body weight held constant, it is concluded that Castle is correct in stating that the genetic agencies affecting size in rabbits are general in action. The data of other workers using different animals indicate that body proportions may not be entirely dependent on factors which affect body weight.—E. B. Wilson and W. J. Luyten: A statistical discussion of sets of precise astronomical measurements. II—

Proper motions. Allegheny and McCormick Observatories issue photographic proper motions in Right Ascension with reference to the mean of the comparison stars. The values are compared with meridian circle determinations (Boss), from which it appears probable that a factor of about 1.4 should be applied to the probable errors.—Raymond Pearl: The influence of alcohol on duration of life. Accurate information has been collected for a group of more than 6000 white persons of a working-class population. Exhaustive data were obtained and the material classified in eight groups according to alcohol consumption. Calculation of life-tables and so on shows that at every age from 30 to 100, moderate drinkers of both sexes have a slightly higher expectation of life than abstainers. Male heavy drinkers have a markedly lower expectation of life than moderate drinkers from 30 to 100 and than abstainers from 30 to 60; from 60 onwards the advantage is slightly to the heavy drinkers, possibly due to the selective effect of high mortality among heavy drinkers prior to 60. For females, expectation of life is markedly lower for heavy drinkers than for moderate drinkers or abstainers from 30 to 100.—W. M. Wheeler: Two extraordinary larval Myrmecophiles from Panama. Both were found in ant nests. One is broad, regularly elliptical, 5.7 mm. long, with flattened creeping-sole bordered with minute red papillæ; the integument is smooth, pale blue, and bears regular longitudinal white scales which on pupation were thrown violently off. No imaginal fly was obtained. It has been named *Microdon aolidiformis*. The other form has an anterior portion which can be withdrawn into the carapace-like abdominal region. The latter is covered with a mosaic of regular hexagonal chitinous plates, the dorsal surface bearing regularly arranged sense-organs; there is no creeping-sole. It has been named *Nothomicrodon aztecarum*.—W. B. Cannon and A. Querido: The rôle of adrenal secretion in the chemical control of body temperature. The rate of heart beat in animals with denervated hearts was increased 12 to 64 per cent. by cooling the body. The effect is not obtained if the adrenal glands are made inactive though shivering is still produced. It is argued that increased adrenal secretion can augment metabolism to counteract the effects of cold.—W. B. Cannon and J. R. Pereira: Increase of adrenal secretion in fever. Experiments similar to those of the previous paper show that fever is associated with increased adrenal secretion.—E. W. Brown: An explanation of the gaps in the distribution of the asteroids according to their periods of vibration. Instability of motion is suggested, on a mathematical basis, as the cause of the gaps.—J. H. Oort (1) Note on the difference in velocity between absolutely bright and faint stars. For stars with total velocities less than 65 km. or for stars moving in a direction opposite to the motions of high velocity stars, the average velocities for giants and dwarfs are nearly equal. There is no hint of increase of velocity with decreasing mass. (2) On a possible relation between globular clusters and stars of high velocity. Curves showing the galactic distribution of globular clusters and the antapices of the motions of high velocities alike show marked avoidance of the Milky Way.—W. J. Luyten: Note on some statistical consequences of the luminosity law.—W. C. Rufus: Atmospheric pulsation of the Cepheid variable, η Aquilæ. Line displacements from different elements and at different levels of the atmosphere of a star have been studied. Generally, compression of the atmosphere occurs after maximum compression of the star as a whole, thus accounting for the retardation of the light maximum. The humps of the velocity-difference curves of the various layers are synchronous with the *Stillstand* of the light curve;

the latter appears to be due to a stage of comparative rest in the star's atmosphere.—B. de Kerékjártó: On parametric representations of continuous surfaces.—A. H. Compton and Y. H. Woo: The wave-length of molybdenum $K\alpha$ rays when scattered by light elements. The secondary radiators used were lithium, boron, carbon, water, sodium, magnesium, and aluminium, and in every case, after scattering at about 125° , an addition to the usual $K\alpha$ peak, there was another in the position predicted by Compton's quantum theory of scattering. With sodium and aluminium, there is perhaps some evidence of tertiary scattering in accordance with the theory of Clark, Stifler, and Duane.—E. C. Kemble: Quantisation in space and the relative intensities of the components of infra-red absorption bands. Bohr's correspondence principle applied to the evaluation of the intensities of lines in the infra-red absorption bands of diatomic gases gives values contrary to experiment in the case of the hydrogen chloride band at 3.5μ . Better results are obtained by assuming a slight precession of the orbital plane about the lines of the earth's magnetic field.—L. Thompson: The ballistic (air resistance) function.—W. A. Setchell: *Ruppia* and its environmental factors. Two distinct forms of *Ruppia maritima* L. were found at Richardson Bay, California. At stations subject to tidal conditions, the plants were perennials with long, spirally curved peduncles, and most of the fruits were robust, rounded and only slightly curved without pronounced beak (var. *longipes*). Plants growing in shallow pools were annuals with practically opposite characteristics (var. *rostrata*). Laboratory experiments show that both varieties tolerate a wide range of salinity, P_H and daylight-darkness ratio; temperatures of $15-20^\circ C.$ are necessary for germination, and $20-25^\circ C.$ for growth and reproductive activity.

Official Publications Received.

- Department of Agriculture, Ceylon. Bulletin No. 69: Notes on the Habits and Life-History of the Indian Glow-worm (An Enemy of the African or Kalutara Snail). By Dr. J. C. Hutson and C. Douglas Austin. Pp. 60. (Peradeniya, Ceylon.) 40 cents.
- Canada. Department of Mines: Geological Survey. Bulletin No. 83 (Geological Series No. 43): Contributions to Vertebrate Paleontology. By Charles W. Gilmore. Pp. ii+64+12 plates. Memoir 136 (No. 117 Geological Series): Amphioxys and Maniwaki Areas, Ontario and Quebec. By M. E. Wilson. Pp. iii+152+12 plates+4 maps. Memoir 137 (No. 118 Geological Series): Paleontology of the Silurian Rocks of Arisaig, Nova Scotia. By F. H. McLearn. Pp. ii+179+30 plates. (Ottawa: F. A. Acland.)
- Department of Commerce: U.S. Coast and Geodetic Survey. Serial No. 258: Effect of Variations in the assumed Figure of the Earth on the Mapping of a large Area. By Walter D. Lambert. (Special Publication. No. 100.) Pp. iii+35. (Washington: Government Printing Office.) 5 cents.
- Department of the Interior: Bureau of Education. Bulletin, 1924. No. 21: Practices and Objectives in Training for Foreign Service; Report of the National Conference on Foreign Service Training, Washington, December 26, 1923. Prepared by Glen Levin Swiggett. Pp. iii+27. (Washington: Government Printing Office.) 5 cents.
- Annuaire de l'Observatoire Royal de Belgique, 1925. Publié sous la direction de G. Lecointe. Pp. vi+294. (Bruxelles: Impr. Van Gompel.)
- Department of Commerce: Bureau of Standards. Circular of the Bureau of Standards, No. 101: Physical Properties of Materials. 1: Strengths and related Properties of Metals and Wood. Second edition. Pp. 204. (Washington: Government Printing Office.) 40 cents.
- Det Kgl. Danske Videnskabernes Selskab. Matematisk-fysiske Meddelelser, V. 3: On the Effect of Magnetic and Electric Fields on the Mercury Spectrum. By H. M. Hansen, T. Takamine, and Sven Werner. Pp. 40+2 plates. (København: A. F. Høst and Son.) 2.25 kr.
- Department of Commerce: Bureau of Standards. Scientific Papers of the Bureau of Standards, No. 487: A Quantitative Study of Regeneration by Inductive Feed Back. By C. B. Jolliffe and Miss J. A. Rodman. Pp. 419-428. 10 cents. Scientific Papers of the Bureau of Standards, No. 483: Thermal Expansion of Molybdenum. By Peter Hidvert and W. B. Gero. Pp. 429-444. 10 cents. Technologic Papers of the Bureau of Standards, No. 258: Strength of Steel Tubing under combined Column and Transverse Loading, including Tests of Columns and Beams. By Tom W. Greene. Pp. 243-276. 15 cents. (Washington: Government Printing Office.)
- Liverpool Astronomical Society. Annual Report 1923-1924. Pp. 8. (Liverpool: H. Norman Edge, Hon. Sec., Central Technical School.)
- Transactions of the Royal Society of Edinburgh. Vol. 54, Part 1, Session 1923-24: The Deep-Sea Deposits of the Atlantic Ocean. Descriptions prepared under the Direction of the late Sir John Murray, and Discussion of the Results by James Chumley. Pp. ix+252. (Edinburgh: R. Grant and Son; London: Williams and Norgate.) 25s.