Societies and Academies.

LONDON.

Royal Statistical Society, April 26.—Miss E. M. **Newbold**: The practical application of the statistics of repeated events with special reference to the personal factor in industrial accidents. The Industrial Fatigue Research Board has in progress an inquiry into individual liability to accident, and the possibility of sorting out persons who ought not to be placed in particularly dangerous occupations. Records of minor accidents among various groups of factory workers, dockyard apprentices, and Royal Air Force apprentices have been compared with the results obtained with selected psychological tests. The statistical side of this investigation, and the effect of chance variation on figures of this kind, were discussed. As regards these minor accidents, the average rate is considerably affected by a comparatively small proportion of people with repeated accidents, whose liability shows measurable stability when they are observed over successive periods and also in different circumstances. These same people also report sick for various minor ailments more frequently than their fellow-workers.

PARIS.

Academy of Sciences, April 4.—Marcel **Brillouin**: Oceans and continents. Oceanic tides and soil tides. Normalised formulæ for their theoretical calculation. —C. **Matignon** and M. **Piettre**: The preparation of beryllium chloride. Beryllia, heated to between 700° and 800° C. in a pyrex glass tube and submitted to a current of chlorine carrying the vapour of sulphur chloride, is readily converted into beryllium chloride, which volatilises. Sulphur chloride may be replaced by the vapour of carbon tetrachloride or by phosphorus trichloride, but in the latter case the product is contaminated with a little phosphorus trichloride.—**de Sparre**: Remarks on the note by M. Sugot, of Feb. 28, 1927, on the integration of the differential equations of the gyroscopic motion of a projectile.—Jean Baptiste **Senderens**: The catalytic decomposition of formic acid. Study of the rate of production of carbon monoxide by the action of sulphuric acid of various strengths and of other catalysts (anhydrous aluminium sulphate, potassium bisulphate, orthophosphoric acid) on formic acid.—Charles **Nicolle**, H. **Sparrow**, and E. **Conseil**: The preventive vaccination of man against exanthematous typhus by the use of small repeated virulent doses (brain of the guinea-pig).—E. **Cartan**: The geodesics of spaces of simple groups.—A. **Gheorghiu**: The growth of the denominator $D(\lambda)$ of Fredholm.—D. V. **Jonesco**: A problem relating to the theory of partial differential equations of the second order with real characteristics. —Albert **Portevin** and André **Sourdillon**: The influence of the tempering temperature on the deformations of steel cylinders.—**Barbillion**: The distribution of the Foucault currents in a metallic disc submitted to the action of an inductor pole of circular section, but eccentric with respect to the disc.—Iser **Solomon**: A direct reading and continuous radio-qualitometer. An instrument for measuring the quality of the X-rays when used therapeutically.—C. **Mihul**: The third order spectrum of oxygen.—R. **Descamps**: The rotatory dispersion in the ultra-violet of aqueous solutions of tartaric acid containing boric acid.—Georges **Fournier**: A relation between the atomic weights of isotopic radio-elements and the velocity of the α-rays which they emit. The velocity of the rays, v, is given by $v_0 - kA$, where v_0 is a term which varies from one group of isotopes to another, A is the atomic weight of the emitting radio-element, and k is a constant. Polonium forms an exception.—René **Audubert**: The determination of the energies of reaction by a knowledge of the active light.—B. **Bogitch**: The reduction of the oxide minerals.—André **Kling** and Daniel **Florentin**: The transformation of the phenols into hydrocarbons in the presence of catalysts and hydrogen under pressure. All aromatic and cyclohexane hydroxyl derivatives heated in the presence of hydrogen under pressure (70 kgm. to 80 kgm. per sq. cm.) with a dehydrating catalyst such as alumina, clay, thoria, silica, give good yields of the saturated hydrocarbons. Thus ordinary phenol with 5 per cent. of alumina heated with hydrogen under pressure to 480° C. gives benzene with some fatty hydrocarbons. Ordinary commercial cresol under the same conditions gives 35 per cent. of light hydrocarbons.—Raymond **Quelet**: Parabromobenzyl chloride and the Grignard reaction. The reaction between $BrC_6H_4CH_2Cl$ and magnesium gives parabromtoluene and *p.p.'*-dibromodiphenylethane.—Maurice **Nicloux**: The microestimation of carbon. Applications. The method is limited to those compounds which can be completely burnt by heating with sulphuric acid, potassium bichromate, and silver bichromate in solution. Test analyses of various organic substances are given, the quantities taken for analysis being 4 mgm.-16 mgm.—Paul **Corbin** and Nicolas **Oulianoff**: The *besimaudites* of Prarion (Haute-Savoie).—Mlle. **Rémy**: Experimental mutations and the mechanisms of spontaneous mutations.—G. **Nadson**: The perforating algæ of the Black Sea. The perforating algæ are very widely distributed in the Black Sea and play an important part in the destruction of the limestone coast, oyster beds, and generally all calcareous substances.— G. **Guittonneau** and J. **Keilling**: Rendering elementary sulphur soluble and the formation of hyposulphites in a soil rich in organic nitrogen.—Emile **André**: Relations between the development of the liver and that of the sexual glands in some cartilaginous fishes.—A. **Gurwitsch** and G. **Franck**: The mitogenetic rays and their identity with ultra-violet rays.—Joseph **Magrou** and Mme. Madeleine **Magrou**: Mitogenetic radiations and the genesis of tumours.—Georges **Lakhovsky**: The influence of the astral radiations on the oscillation of living cells.—Henri **Mémery**: The influence of the astral radiations on wines.—**Swigel** and Théodore **Posternak**: The preparation of polypeptides containing the phosphorus and ferric nuclei of ovovitelline.—A. C. **Marie** and S. **Mutermilch**: Attempts at antirabic vaccination of the rabbit in the meningeal cavity.

WASHINGTON, D.C.

National Academy of Science (*Proc.*, Vol. 13, No. 2, February).—Norbert **Wiener**: On the closure of certain assemblages of trigonometrical functions.—G. Y. **Rainich**: On a type of Lorentz transformations. —Gordon T. **Whyburn**: Cyclicly connected continuous curves.—L. P. **Eisenhart** and M. S. **Knebelman**: Displacements in a geometry of paths which carry paths into paths.—Edwin H. **Hall**: Photo-electric emission, thermionic emission, and Peltier effect (from the point of view of dual electric conduction). These effects can be accounted for on the assumption that the greater part of the current within a metal is carried by electrons travelling from atom to atom without sharing the heat energy and a much smaller portion by 'free' electrons.—P. W. **Bridgman**: The transverse thermo-electric effect in metal crystals. With single crystal bars of bismuth about 10 cm. long and 6 mm. in diameter, basal plane inclined at 20° to the length, a temperature difference of 0·4° C. between two sides of the bar was observed when currents of 1 amp. were passed along it. Similar

but much smaller effects were obtained with zinc, tin, and cadmium. Kelvin's theoretical prediction of the effect is thus verified, but his reasoning seems inadequate. Regarding the current as an electron stream, the effect seems to be due to the reversible absorption or evolution of heat which occurs on the change of net direction of the electron stream with respect to a crystal axis inclined to the surface, after reflection from the surface.—Worth H. **Rodebush**: The effect of velocity distribution on the deflexion of atoms in an inhomogeneous magnetic field.—Carl **Barus**: Pinhole probe record of the closed organ pipe. —A. H. **Warner**: A comparison of the thermionic and photoelectric work functions for clean tungsten. The work functions in Richardson's thermionic equation and also in Einstein's photoelectric equation, which measure the work necessary to carry an electron from the interior of the metal to a position outside and beyond the influence of the image force, should, if conduction electrons are concerned in each process, be identical when measured at the same temperature. This has been verified within the limits of experimental error for clean tungsten illuminated by a quartz mercury arc and a monochromatic illuminator.—Enos E. **Witmer**: The quantisation of the rotational motion of the polyatomic molecule by the new wave mechanics. The polyatomic molecule is regarded as a rigid body with three principal moments of inertia.—Stanley **Smith**: A note on the spectrum of doubly ionised scandium.—Robert E. **Burk**: The thermal decomposition of ammonia upon the surface of a molybdenum wire. The effect of the initial pressure of ammonia upon the time of half life at 1228° Abs. suggests an apparent order of the reaction of zero. Hydrogen as an impurity was almost without effect; nitrogen caused marked retardation (catalyst poison), which persisted after pumping off to a vacuum. The results can be explained equally well by assuming that the reaction continues on parts of the surface not poisoned or that it can take place, at a reduced rate, on the poisoning film of nitrogen. Working at 1097°-1228° Abs., measurements of the temperature coefficient indicate a true heat of activation of 53,200 cal.—A. V. **Kidder**: Eskimos and plants. Fernald supposes that the highly specialised plants found in the Arctic Archipelago, the Torngat Mountains of Labrador, and similar localities in Northern America, are remnants of a general pre-glacial flora surviving in districts not covered by continental ice during the Pleistocene. It is suggested that the Eskimos are comparable in many ways with Fernald's plants.—C. Stuart **Gager** and A. F. **Blakeslee**: Chromosome and gene mutations in Datura following exposure to radium rays. Sealed glass tubes containing radium emanation were inserted into flower buds of *Datura Stramonium*. The results claimed include an increased percentage of chromosomal mutants, a new compound chromosomal type, Nubbin, and two new gene mutants.—A. F. **Blakeslee**: The chromosomal constitution of Nubbin, a compound ($2n+1$) type in Datura.

Official Publications Received.

BRITISH.

Department of the Interior, Canada: Natural Resources Intelligence Service. Canada as a National Property. Pp. 75+9 maps. (Ottawa: F. A. Acland.)

Society of Chemical Industry: Chemical Engineering Group. Proceedings. Vols. 6B and 7, 1924-1925. Pp. viii+199. (London.)

Navy (Health). Statistical Report of the Health of the Navy for the Year 1924. Pp. v+127. (London: H.M. Stationery Office.) 4*s*. 6*d*. net.

Annals of Eugenics: a Journal for the Scientific Study of Racial Problems. Edited by Karl Pearson, assisted by Ethel M. Elderton. Vol. 2, Parts 1 and 2, April. Pp. 244. (London: Francis Galton Laboratory for National Eugenics, University College.) 35*s*. net.

Report of the Oversea Settlement Committee for the Year ended 31st December 1926. (Cmd. 2847.) Pp. 30. (London: H.M. Stationery Office.) 6*d*. net.

Mysore Geological Department. Records, Vol. 24, 1925. Part 2. Pp. v+29-160. (Bangalore: Government Press.) 2 rupees.

Bureau of Education, India. Occasional Reports, No. 14: Some Experiments in Indian Education. Pp. iv+84. (Calcutta: Government of India Central Publication Branch.) 1.8 rupees: 2*s*. 6*d*.

British Guiana: Combined Court, Annual Session 1926. Interim Report and Statement of Policy of Geological Survey. By the Economic Geologist and Mineralogist. Pp. 8. (Georgetown, Demerara.)

Publications of the South African Institute for Medical Research. No. 19: Contributions to the Study of Miners' Phthisis. By A. Mavrogordato. Pp. 83+13 plates+13 graphs. (Johannesburg.) 5*s*.

Deep Level Mining and High Temperatures: an Enquiry into certain Cases of Sudden Death presumably due to Heat Stroke, with a Report on the Associated Conditions. By A. Mavrogordato and H. Pirow. (Reprinted from the *Journal of the South African Institution of Engineers*, Vol. 25.) Pp. 23. (Johannesburg: South African Institute for Medical Research.)

Cocoa: the Story of its Cultivation. Pp. 48. (Bournville: Cadbury Bros., Ltd.)

Seale-Hayne Agricultural College, Newton Abbot, Devon: Department of Plant Pathology. Third Annual Report for the Year ending September 30th, 1926. (Pamphlet No. 21.) Pp. 25. (Newton Abbot.)

The National Physical Laboratory. Watch and Chronometer Trials, 1926. Pp. 6. (London: H.M. Stationery Office.) 6*d*. net.

Journal of the Chemical Society: containing Papers communicated to the Society. April. Pp. vi+iv+697-960. (London: Gurney and Jackson.)

The Quarterly Journal of the Geological Society. Vol. 83, Part 1, No. 329, April 23rd. Pp. xlviii+194+12 plates. (London: Longmans, Green and Co., Ltd.) 7*s*. 6*d*.

FOREIGN.

Carnegie Endowment for International Peace: Division of Intercourse and Education. Annual Report of the Director for the Year 1926. Pp. 41+4 plates. (New York City.)

Smithsonian Miscellaneous Collections. Vol. 75, No. 4: Cambrian Geology and Paleontology, V. No. 4: Pre-Devonian Sedimentation in Southern Canadian Rocky Mountains. By Charles D. Walcott. (Publication 2870.) Pp. 147-173. (Washington, D.C.: Smithsonian Institution.)

Department of the Interior: Bureau of Education. Bulletin, 1926, No. 24: An Outline of Methods of Research, with Suggestions for High School Principals and Teachers. Pp. vi+31. (Washington, D.C.: Government Printing Office.) 10 cents.

Travaux et Mémoires du Bureau International des Poids et Mesures. Publiés sous les auspices du Comité International par le Directeur du Bureau. Tome 17. Pp. vi+240+142+95+4. (Paris: Gauthier-Villars et Cie.)

Ministry of Finance: Control of Printing. Almanac for the Year 1927. Pp. ix+358. (Cairo: Government Publications Office.) 7 P.T.

Travaux de la Section de Géodésie de l'Union Géodésique et Géophysique Internationale. Tome 3: Rapports nationaux sur les travaux exécutés dans les différents pays présentés à la deuxième assemblée générale, Madrid, 24 septembre—8 octobre 1924. 19 rapports. (Paris.)

Journal of the College of Agriculture, Hokkaido Imperial University, Sapporo, Japan. Vol. 16, Part 5: Beiträge zur Entwicklungsgeschichte der Reptilien. i: Die frühesten Entwicklungsvorgänge bei der Waldeidechse (*Lacerta vivipara* Jacq.). Von Tetsuo Inukai. Pp. 125-201+14 Tafeln. Vol. 16, Part 6: Studies on the Sauropsid Chromosomes. i: The Sexual Difference of Chromosomes in the Pigeon. By Kan Oguma. Pp. 203-227+plates 15-16. (Sapporo.)

Department of Commerce: Bureau of Standards. Technologic Papers of the Bureau of Standards, No. 335: Thermal Expansion of Graphite. By Peter Hidnert and W. T. Sweeney. Pp. 223-230. (Washington, D.C.: Government Printing Office.) 5 cents.

CATALOGUES.

The West Indies: being a Catalogue of Books, Maps and Engravings, relating to British and Foreign Possessions in the West India Islands. (No. 495.) Pp. 42. (London: Francis Edwards.)

Akehurst's Sub-Stage Condenser Changer. Pp. 6. Shop Soiled Apparatus at Reduced Prices: Microscopes, Objectives, Binocular Dissecting Microscopes, Photomicrographic and Projection Apparatus, Cameras, etc., also Second-hand Apparatus. Pp. 28. Fodis Photographic Distance Meter. Pp. 1. Microscope Objectives. Pp. 1. Leitz Binocular Microscope. Pp. 2. Ogilvy Elementary Microscope. Pp. 2. Brinnell-Ogilvy Microscope. Pp. 2. Leitz 'Leica' Roll Film Camera. Pp. 4+4. (London: Ogilvy and Co.)

Diary of Societies.

SATURDAY, MAY 14.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS (Yorkshire District Meeting) (at Town Hall, Cleckheaton), at 2.

PHYSIOLOGICAL SOCIETY (in Department of Physiology, Cambridge), at 2.30.—Demonstrations: Crystals of Hæmoglobin in Intracorpuscular Environment, N. Henderson and G. N. Spencer; Bodies related to Hæmoglobin in Vegetable Food Stuffs, D. Keilin; The Preparation of Hæmoglobin and its Analogues from their Constituents, R. Hill; Auto-oxidation of Plasma in Anæmia, Dr. Litarczeck and Dr. Stromberger; The Extra Cutaneous Spleen, Prof. J. Barcroft; The Dissociation Curve of CO Hæmoglobin, W. H. Forbes; Apparatus for Measurement of Difference in Potential on two Sides of a Membrane, G. S. Adair; Vital Staining in Living Blood Cells, L. J. Witts and R. A. Webb; The Influence of Relative Proportions of Antigen and Antibody on the Formation of a Precipitate, Prof. H. R. Dean and R. A. Webb; A New Method for Subjecting Developing Organisms to