

## Societies and Academies.

## LONDON.

**Physical Society, April 27.**—Will C. Baker: Experiments with mercury jets and the phenomena exhibited at their impact with steel and glass. As a light sphere is retained in a vertical jet of fluid in virtue of the change of momentum of the fluid produced by its adhesion to the sphere, it was thought that a steel sphere would not be retained in a vertical mercury jet, as there is no 'wetting' of the steel by that fluid. Experiment showed that a given bicycle ball might or might not be retained by such a jet, as the speed of the jet (at a given angle of incidence) rose above or fell below a critical value for that ball. Conditions were simplified by the use of cylindrical and of plane surfaces of steel, and an approximately constant time of adhesion between mercury and steel was found for various speeds of impact. This led to the explanation of the phenomenon in terms of the well-known instability of jets.—E. P. Perman and W. D. Urry: The elastic constants of glass. The coefficients of compressibility of soda-glass and Jena 16<sup>m</sup> glass have been determined at six temperatures ranging from 30° C. to 80° C. From experiments on the effect of external pressure only, Poisson's ratio has been determined, and hence the modulus of rigidity and Young's modulus.—G. Eric Bell: A valve-maintained high-frequency induction furnace and some notes on the performance of induction furnaces. In Part 1 the electrical design is given of a valve-operated high-frequency induction furnace; in Part 2 a theory of the behaviour of induction furnaces in general is developed.

**Society of Public Analysts, May 2.**—A. L. Williams: Locust kernel gum and oil. Locust kernel gum has recently been used as a thickening agent for sauces. Its reactions with tannin, borax, and Fehling's solution are the most characteristic. So little as 1 per cent. of the gum may be separated from sauce or jam by treatment with tannin. The constants of the kernel oil have been determined (iodine value, 98.4). The oil gave a negative result in the antimony trichloride test for vitamin A.—W. R. Schoeller and E. F. Waterhouse: Investigations into the analytical chemistry of tantalum, niobium, and their mineral associates. (12) Observations on the pyrosulphate hydrolysis method. The pyrosulphate hydrolysis method does not effect a quantitative separation of the earth acids from zirconia. At best, a decrease in the quantity of zirconia co-precipitated is achieved, at the cost of slightly incomplete earth acid precipitation.—F. W. Toms and C. P. Money: The separation of lead tetra-ethyl from solution in petroleum spirit. The method depends on the separation of lead ethyl sulphinate on passing sulphur dioxide into 'ethyl petrol,' and conversion of the deposit into lead sulphate.—B. S. Evans and S. G. Clarke: New precipitation method of determining vanadium and its application to steel analysis. The method is based on the precipitation of vanadium as ferrocyanide and eventual determination of the vanadium present by titration with potassium permanganate. Vanadium ferrocyanide is insoluble in mineral acids of quite high concentration. In applying the process to steel analysis, the iron is quantitatively converted into ferrocyanide by reducing it from the ferric condition in alkaline citrate solution in the presence of cyanide, and the resulting ferrocyanide then acts as the reagent for the vanadium.—P. Houseman: The examination of liquorice mass. Stick liquorice adulterated with starch is now extensively sold in England, and a test

to detect this adulteration has been devised. Occasionally the added starch is boiled so as to destroy the individuality of the granules, but usually it is possible to discover a few granules that have escaped disintegration.

## PARIS.

**Academy of Sciences, April 11.**—A. Lacroix: The composition of the basaltic lavas of Indo-China.—Charles Nicolle and Charles Anderson: The presence in Morocco of the spirochæte of recurrent Spanish fever. The Spanish and Moroccan varieties of spirochæte must be considered as belonging to the same species: the Moroccan strain is perhaps somewhat more virulent to the guinea-pig than the Spanish.—R. Coenen: The mean geodesic curvature.—G. Vranceanu: Some tensors in the non-holonomic varieties.—Edward Stenz: Observations of solar radiation and of atmospheric opacity made at Jokkmokk during the solar eclipse of May 29, 1927.—Ch. Jacquet: Experimental researches on the magnetisation of the volcanic rocks of the Department of Puy-de-Dôme.—The coefficients of magnetisation determined varied from 9.2 to less than 3 (magnetite, 92.7). Determinations of the variation of the magnetisation with the temperature showed that all the specimens examined the magnetisation of which was above 4 units, gave a Curie point of 550° C., near that of magnetite. The enclosures gave 580° C., exactly that of magnetite.—H. Ollivier: Research on the thermal variation of the magnetic rotatory power, in the case where the magnetisation coefficient is positive and independent of the temperature. For sodium bichromate, the paramagnetism of which is constant, the Verdet constant, referred to the unit of mass, does not vary between 7° and 61° C. by a quantity exceeding the error of experiment.—A. Boutaric and F. Banès: The immunity of the granule in colloidal solutions. The results of experiments described agree with the views of A. Lumière in that they prove a certain analogy between living cells and colloids in the sol condition, and between flocculated colloids and dead cells.—Daniel Bodroux: The condensation of cyclohexene with some aromatic hydrocarbons in the presence of aluminium chloride. Toluene and cyclohexene in presence of aluminium chloride give cyclohexyltoluene. The replacement of the toluene by other aromatic hydrocarbons gives analogous products.—L. Palfray and B. Rothstein: Some derivatives of quinite. A description of the preparation of acetate and benzoates of quinite.—R. Morquer: The systematic value of the genera *Dactylium* and *Diplocladium*, especially *Dactylium macrosporium*.—A. Sartory, R. Sartory, and J. Meyer: The influence of radium on the production of the zygospores in *Mucor spinosus* (*Zygorhynchus spinosus*). Zygospores were produced in cultures under the influence of the radium radiation: in the absence of radium, no zygospores were obtained by cultivation in the same culture medium.—E. Brumpt: The study of auto-fecundation in the aquatic mollusc *Bullinus contortus*.—J. B. Abelous and H. Lassalle: The humoral origin of the modifications of excitability of the nervous system in the course of the Wallerian degeneration of a severed nerve.—Emile F. Terroine and Mme. Hélène Sorg-Matter: The influence of the magnitude of the consumption of thermogenesis on endogenous nitrogen metabolism.—Georges Lakhovsky: The action on living beings of oscillating circuits.—Em. Perrot and P. Bourcet: A new method of estimating crystallised digitalin.

## LENINGRAD.

**Academy of Sciences** (*Comptes rendus*, 1928, A, No. 1).—V. Ipatiev, N. Orlov, and B. Dolgov: The

preparation of certain  $\alpha$ - $\omega$ -diphenylparaffins. Diphenylpropane may be obtained by hydrogenating dibenzylketone under pressure in presence of nickel at 210° C., using Ipatiev's high-pressure apparatus. Diphenylbutane may be prepared by hydrogenating unsaturated diphenylparaffins (diphenylacetylene and diphenylbutadiene) under pressure at 210° C. Diphenylpentane can be prepared by hydrogenating dibenzylacetone obtained by distilling calcium salts of phenylacetic and phenylpropionic acids.—P. P. Sacharov: The hereditary transmission of the size and weight of flies resulting from inanition. The reduction in size and weight of larvæ, pupæ, and adult house flies resulting from inanition is not hereditary, since the progeny of the smallest flies was larger than that of the normal ones.—P. Kobeko and I. Kurchatov: The validity of Faraday's law for currents due to ionisation by collision. It has been shown that in an electrical field exceeding  $2 \times 10^6$  volts/cm., new charges arise due to collision; it has not been ascertained, however, whether the newly formed charges are ions or electrons. The most direct way to solve the question was to test the application of Faraday's law in such conditions. The results of the experiments by the authors show that Faraday's law holds within the limits of errors, and that consequently the charges liberated by the mechanism of collision are ions and, especially in the case of glass, the most mobile, the sodium ions.—P. Schmidt: Three rare cat-fishes of the Magdalena River (South America, Columbia). *Doras crocodili* Humb. et Val. is re-described fully, and *D. longispinis* Steindachner referred to it as a synonym; measurements of *Trachycorystes magdalenæ* Steind. and *Pimelodina flavipinnis* Steind. are given.—P. Tartakovskij: The scattering of electrons in a thin aluminium foil. Scattering of electrons by the surface of a crystal is accompanied by interference of phase waves. A diagram analogous to a röntgenogram is obtained containing several maxima the significance of which has not been discovered.

## Official Publications Received.

### BRITISH.

- Memoirs of the Department of Agriculture in India. Entomological Series, Vol. 10, No. 3: A Contribution to our Knowledge of South Indian Braconidae, Part 1: Vipioninae. By Dr. T. V. Ramakrishna Ayyar. Pp. 27-60f+plates 5-14. 14 annas; 1s. 3d. Entomological Series, Vol. 10, No. 5: The Use of Hydrocyanic Acid Gas for the Fumigation of American Cotton on Import into India; Experiments on its Lethal Power for the Mexican Boll-Weevil (*Anthonomus grandis*), and for the Grain-Weevil (*Strophilus oryzae*); on the Extent to which it is absorbed by Cotton and Jute respectively; and on a Practical Method for Satisfactory Fumigation on a large Scale. By A. James Turner and D. L. Sen. Pp. vi+69-166. 2 rupees; 3s. 9d. (Calcutta: Government of India Central Publication Branch.)
- Agricultural Research Institute, Pusa. Bulletin No. 173: Occurrence of Trichomonad Flagellates in the Blood Stream of Fowls. By Hugh Cooper and Amar Nath Gulati. Pp. 9+1 plate. (Calcutta: Government of India Central Publication Branch.) 3 annas; 4d.
- Journal of the Indian Institute of Science. Vol. 11A, Part 1: i. Studies on Invertebrates, Part 1: Preparation and Purification of the Enzyme, by B. N. Sastri and Roland V. Norris; ii. Note on a Simple Method for Concentrating Enzyme Solutions, by B. N. Sastri. Pp. 15. Vol. 11A, Part 2: The Bleaching of Lac. By M. Venugopalan. Pp. 17-22. Vol. 11A, Part 3: Contributions to the Study of Spike-Disease of Sandal (*Santalum album*, Linn.); Part i. Diastatic Activity of the Leaves. By M. Sreenivasaya and B. N. Sastri. Pp. 23-29. Vol. 11A, Part 4: A Micro-method for the Determination of Enzyme Activity. By B. N. Sastri and M. Sreenivasaya. Pp. 31-39. (Bangalore.)
- Air Ministry: Meteorological Office. International Meteorological Organization: Commission for the Exploration of the Upper Air. Report of the Meeting in Leipzig, August 29-September 3, 1927. (M.O. 300.) Published by the Authority of the Meteorological Committee. Pp. iv+107. (London: H.M. Stationery Office.) 3s. 6d. net.
- Transactions of the Royal Society of Edinburgh. Vol. 55, Part 3, No. 23: Schist Geology; Braemar, Glen Clunie and Glen Shee. By E. B. Bailey. Pp. 737-754+1 plate. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.) 2s. 6d.
- Bishop's Stortford College. Report of the Proceedings of the Natural History Society, 1927. Pp. 20. (Bishop's Stortford.)

No. 3055, Vol. 121]

- A Report on the Public Museums of the British Isles (other than the National Museums). By Sir Henry Miers to the Carnegie United Kingdom Trustees. Pp. ii+213+8 plates. (Dunfermline: Carnegie United Kingdom Trust.)
- A Report on American Museum Work. By Dr. E. E. Lowe. Pp. 50+12 plates. (Dunfermline: Carnegie United Kingdom Trust.)
- The Scottish Forestry Journal: being the Transactions of the Royal Scottish Arboricultural Society. Vol. 42, Part 1, March. Pp. 34+27. (Edinburgh.) 7s. 6d.
- Journal of the Chemical Society: containing Papers communicated to the Society. April. Pp. iv+749-1060+VIII. (London: Gurney and Jackson.)
- Research Association of British Paint, Colour and Varnish Manufacturers. Review of Current Literature relating to the Paint, Colour and Varnish Industries. No. 1, Jan.-Feb. Pp. 31. (Teddington: Paint Research Station.)
- Experimental Researches and Reports published by the Department of Glass Technology, The University, Sheffield. Vol. 10, 1927. Pp. iii+186. (Sheffield.)
- Proceedings of the Cambridge Philosophical Society. Vol. 24, Part 2, April. Pp. 171-356. (Cambridge: At the University Press.) 7s. 6d. net.
- Journal of the Marine Biological Association of the United Kingdom. New Series, Vol. 15, No. 2, April. Pp. 365-731. (Plymouth.) 12s. 6d. net.
- Nation and Protectorate of Kenya. Agricultural Census: Eighth Annual Report, 1927. Pp. 44. (Nairobi: Department of Agriculture.)
- Index to the Quarterly Journal of the Royal Meteorological Society. Vols. 27-51, 1901 to 1925. Pp. 71. (London: Edward Stanford, Ltd.) 2s. 6d.
- Indian Journal of Physics, Vol. 2, Part 3, and Proceedings of the Indian Association for the Cultivation of Science, Vol. 11, Part 3. Conducted by Prof. C. V. Raman. Pp. 267-393+plates 6-12. (Calcutta.) 3 rupees; 4s.
- General Guide to the Durban Museum. By E. C. Chubb. Third edition. Pp. 72. (Durban.) 6d.
- The Mining Institute of Scotland. Jubilee, January 1928. Pp. 26. (Glasgow.)
- Union of South Africa. Report of the South African Museum for the Year ended 31st December 1927. Pp. ii+13. (Cape Town.)
- Board of Education. Syllabus of the Science Scholarships Examination, 1929. Pp. 23. (London: H.M. Stationery Office.) 3d. net.
- Stonyhurst College Observatory. Results of Geophysical and Solar Observations, 1927; with Report and Notes of the Director, Rev. E. D. O'Connor. Pp. xxii+48. (Blackburn.)
- County Council of the West Riding of Yorkshire: Education Committee. Summer Vacation Course for Teachers, Bingley Training College, August 1st to August 15th, 1928. Pp. 24. Summer Vacation Courses in Physical Training and Swimming to be held at the Grammar School, Ilkley, 30th July-11th August 1928. Pp. 8. (Wakefield.)
- Annual Report of the Council of the Yorkshire Philosophical Society for the Year 1927, presented to the Annual Meeting, February 13th, 1928. Pp. 4+12. (York.)
- Society of Chemical Industry: Chemical Engineering Group Proceedings, Vol. 8, 1926. Pp. viii+127. (London.) 10s. 6d.
- The Quarterly Journal of the Geological Society. Vol. 84, Part 1, No. 333, April 30th. Pp. xviii+178+12 plates. (London: Longmans, Green and Co., Ltd.) 7s. 6d.

### FOREIGN.

- Scientific Papers of the Institute of Physical and Chemical Research. No. 131: Experimental Studies on Form and Structure of Sparks, Part i. By Torahiko Terada and Ukitirō Nakaya. Pp. 19+5 plates. 35 sen. Nos. 132-134: Mechanism of Sapigo de Celulozesteroj de Altaj Patacidoj, de Iŝiro Sakurada; Sapigo de Celulozacetato per Alkaloj, de Iŝiro Sakurada; Pri Sapigo de Celulozacetato dum la Hidratigado, de Iŝiro Sakurada. Pp. 21-61. 50 sen. No. 135: Experimental Studies on Form and Structure of Sparks, Part ii. By Torahiko Terada and Ukitirō Nakaya. Pp. 63-82+plates 6-8. 30 sen. No. 136: The Reversal of Helium Bands. By Toshio Takamine and Taro Suga. Pp. 83-91+plate 9. 20 sen. No. 137: The Effect of Hydrochloric Acid on the Oxidation of Stannous Chloride by Air. By Susumu Miyamoto. Pp. 93-102. 20 sen. No. 138: Experimental Studies on Form and Structure of Sparks, part iii. By Torahiko Terada and Ukitirō Nakaya. Pp. 103-129+plates. 10-14. 40 sen. (Tokyo.)
- Nebraska Geological Survey. Bulletin 2, Second Series: The Fusulinidae of the Pennsylvanian System in Nebraska. By Carl O. Dunbar and G. E. Condra. Pp. 130+15 plates. (Lincoln, Nebr.)
- Journal of the College of Agriculture, Hokkaido Imperial University, Sapporo, Japan. Vol. 19, Part 3: Protease and Amylase of *Aspergillus oryzae*. By Kokichi Oshima. Pp. 135-244. Vol. 19, Part 4: Embryological Studies in *Oryza sativa* L. By Shinichi Terada. Pp. 245-260+plates 6-9. Vol. 20, Part 4: Chemismus der kombinierten Tannin-Chrom-Gerbung, von Prof. Dr. G. Grasser und Dr. Hirose; Kleinere Experimentale-Untersuchungen aus dem Institute für Gerberei-Wissenschaft, von Prof. Dr. Georg Grasser. Pp. 203-232. (Tokyo: Maruzen Co., Ltd.)
- Report of the Aeronautical Research Institute, Tōkyō Imperial University. No. 32: Researches on Cellulose Acetate and its Solution. i. Composition of Cellulose Acetate Lacquer for Aeroplane Dope. By Katsumoto Atsuki and Ryo Shinoda. Pp. 49-69. 0.37 yen. No. 33: Researches on Cellulose Acetate and its Solutions. ii. Stability of Cellulose Acetate. By Katsumoto Atsuki. Pp. 71-89. 0.33 yen. No. 34: Researches on Cellulose Acetate and its Solution. iii. Stabilizer for Cellulose Acetate. By Yoshio Tanaka and Katsumoto Atsuki. Pp. 91-101. 0.23 yen. No. 35: Researches on Cellulose Acetate and its Solution. iv. On the Acetylation of Cellulose. By Katsumoto Atsuki and Ryo Shinoda. Pp. 103-113. 0.23 yen. No. 36: Researches on Cellulose Acetate and its Solution. v. Relation of Temperature and Time of Ripening to the Viscosity of Cellulose Acetate. By Katsumoto Atsuki and Ryo Shinoda. Pp. 115-125. 0.23 yen. (Tōkyō: Kōseikai Publishing House.)
- Bulletin of the Earthquake Research Institute, Tokyo Imperial University. Vol. 4. Pp. 234+65 plates. (Tokyo.)