and conduction through gases. In each of these branches groups of workers are engaged. My own investigations lie in the last of these, and in the mobility of gaseous ions in particular. We have recently shown that minute traces of impurity may have a profound effect upon the mobility of positive ions. Thus the mobility of positive ions in helium is raised fourfold by the elimination of all impurities. We are therefore engaged upon a re-investigation of the whole subject with improved technique. We also find that the method may be used to analyse the ions present in the various inert gases when contaminated by small amounts of known impurities, and we are thereby obtaining useful information on the phenomena of electron capture and of ionisation by collisions with metastable atoms.

## Societies and Academies.

PARIS.

**Academy of Sciences**, July 15.—The president announced the death of Albert A. Michelson, foreign associate.—**Ch. Fabry**: An interferential level without an air bubble. A liquid, preferably oil, is contained in a vessel the bottom of which is a platinised glass spherical surface of very large radius (500 metres). By means of the interference rings produced, this can be used as a level of high precision.—**C. Camichel** and **P. Dupin**: The various modes of contraction of a liquid stream at the commencement of an efflux.—**Henri Lagatu** and **Louis Maume**: The variation of the physiological relations between the mineral constituents of a plant species.—**M. Ghermanesco**: The $n$-metaharmonic functions.—**René Pallu**: Study of the system $H_3PO_4$, $Ba(OH)_2$, $CO_2$, $H_2O$.—**Agostino Puppo** and **Pietro Longo**: The storm of July 24, 1930, in the Treviso-Udine district. A correction of a misprint in the *Comptes rendus*, June 8, 1930.—**A. Guilliermond**: The mode of formation of the anthocyanic pigments in the flower of *Iris germanica*. The anthocyanic pigments in the flower of *I. germanica* are preceded by the production of oxyflavonols.—**Léon Binet** and **J. Magrou**: Sulphur and growth. The high proportion of glutathione in tissues during the period of proliferation suggested a study of the influence exerted on growth by various sulphur compounds. The activating action of sodium hyposulphite on growth has been demonstrated in the case of cress and of the tadpole.—**C. Levaditi**, **J. Bardet**, **A. Tchakirian**, and **A. Vaisman**: The distribution of gallium in the organism. From the point of view of its distribution in the blood and tissues (rabbits) gallium behaves like bismuth, tellurium, and mercury.—**Bordier**: The remarkable action of diathermic d'Arsonvalisation at a distance.

July 20.—**G. Ferrié**: *Compte rendu* of the general meeting of the International Radio-Scientific Union held at Copenhagen on May 27–June 6, 1931. Details of the various committees and the work allotted to each.—**L. Blaringhem**: A mutation of the common wallflower (*Cheiranthus Cheiri*).—**Gabriel Bertrand** and **P. Serbescu**: The toxic power of aluminium compared with that of iron, nickel, and other metals. Aluminium and iron possess about the same toxic power, both much less than that of nickel and copper. There is no definite proof that small repeated doses of aluminium are toxic.—**M. de Broglie** and **L. Leprince-Ringuet**: The artificial disintegration of aluminium.—**C. Sauvageau**: The rôle of Aglaozonia of parthenogenetic origin.—**H. Milloux**: Certain integral functions and their derivatives.—**Lucien Féraud**: Arithmetical study of the permanent stability in the neighbourhood of an equilibrium point.—**Alfred Rosenblatt**: The movements of viscous liquids symmetrical with respect to an axis.—**Pierre Dive**: An exclusive property of ellipsoidal homoids.—**G. Fayet**: The orbits of the planets Neptune and Pluto.—**Auguste Claude**: The use of geometric loci for the representation of observations of passage in the meridional telescope.—**L. Bouchet**: The electromotive forces of two liquid batteries and their variations with the dilution of the solutions.—**F. Holweck** and **P. Chevallier**: A 150-kilowatt triode capable of being taken apart.—**Horia Hulubei**: A system of bands of mercury in the neighbourhood of its resonance ray.—**J. Cabannes** and **Mlle. D. Osborne**: The depolarisation of lines of the $CO_3$ ion in the spectrum of the light diffused by a calcite crystal.—**Jean Becquerel** and **Louis Matout**: The decomposition of the absorption bands of xenotime by a transverse magnetic field. The conditions of symmetry in relation with the crystalline symmetry. A new interpretation of the magneto-electric effect.—**Constantin Salceanu**: The invariant of magnetic rotation of some organic substances in the fused state.—**Mlle. Quintin**: The hydrolysis of copper sulphate.—**René Audubert**: The rôle of water in photovoltaic cells. The experiments detailed establish that water plays an essential part in photovoltaic phenomena, its influence being mainly exercised in the adsorption layer at the surface of the electrode.—**Tcheng Datchang**: The purification of the protactinium fixed on tantalum oxide, with reference to the estimation of protactinium in radioactive minerals. In determining the proportions of protactinium present in radioactive minerals, it is essential that radium, ionium, and polonium should first be removed. Details of satisfactory methods of separation of these three elements are given.—**Albert Portevin** and **Pierre Chevenard**: The graphitisation of steels at a low temperature.—**P. Laffitte** and **M. Patry**: The deflagration and detonation of mercury fulminate.—**Georges Lévy**: α-Ethylnaphthalene and its hydrogenation products.—**A. Mailhe** and **Creusot**: The transformation of toluene and of xylene into methane. A quantitative study of the hydrogenation of these two hydrocarbons in the presence of reduced nickel as catalyst at varying temperatures.—**Émile André** and **Charles Vernier**: The rotatory power of ricinolamide.—**F. Dupré la Tour**: The polymorphism of malonic, succinic, and glutaric acids as a function of the temperature. Each of these acids exists in two forms, with a definite transition temperature.—**Louis Glangeaud**: The structure of the primary massif of Algiers.—**J. Malavay**: The geology of Mauritania of the Nord.—**Y. Milon** and **M. Sire**: The interdependence of the Tertiary and Quaternary formations in the Vilaine and Mayenne valleys.—**Ch. Poisson**: Phenomena due to the meeting of a monsoon and a trade wind on the southern Indian Ocean.—**H. J. Maresquelle**: The action of *Bacterium tumefaciens* on regeneration, in the root of *Taraxacum dens leonis*.—**Pierre Gavaudan** and **Robert Cazalas**: New observations on the spermatogenesis of the Characeæ. The nature of the granulated band and the appearance of carotene and of chlorophyll in certain spermatocytes.—**Charles Pérez**: Organogenesis of the substitution buds in *Chlorogaster*, parasite of the hermit crab.—**A. Policard**: Histochemical researches on the initial lesions of experimental pulmonary silicosis (silica plaques).—**Aloncle**: The synergism of hypophysine and thymine.—**A. Leulier**, **B. Pommé**, and **R. Delaye**: The distribution of potassium in healthy or pathological muscle.—**E. Roubaud**: Cyclic evolutive fatigue and tireless strains in the common green fly *Lucilia seratica*.—**E. Chatton** and **Mme. M. Chatton**: The conjugation of *Paramœcium caudatum* determined

experimentally by modification of the associated bacterial flora.—Mlle. D. van Stolk, J. Guilbert, and H. Pénau: Carotene and vitamin A. The absence of xanthophyll in the carrot has been proved, also the presence of more than one carotene, differing in their physico-chemical properties, but all possessing physiological activity.—A. Paillot: The gattine of the silkworm.

GENEVA.

Society of Physics and Natural History, May 21.—M. Decker: The synthesis of Bichler and Napieralski. The author recapitulates the history of a very important synthesis in the field of the alkaloids. It had its origin in a work of Bichler, published in 1893, and appears again in the works of Pictet and of Decker in 1909; it served as the starting-point of the work of Robinson in England in 1915, and was presented as a novelty in 1930 by Späth of Vienna.—Jean Deshusses and Louis Deshusses: Some insects specially injurious to cultivation in French Switzerland. The laboratory of agricultural chemistry (Châtelaine-Genève) points out cases of new, or little known, parasitism, the agents of which are Diptera or Lepidoptera. Fifteen insects are described which cause damage to cultivation in Geneva and French Switzerland. The most interesting are: *Ophionya pinguis* and *Phytomyza continua* on chicory, *Argyroploce antiquana* on the Japanese artichoke, *Evetria buoliana* on various pines, *Dioryctria abietella* on the Douglas pine, *Perrisia violæ* on the cultivated violet.

LENINGRAD.

Academy of Sciences, *Comptes Rendus*, 1931, No. 2.—G. Nadson and G. Filippov: The formation of new stable races of micro-organisms under the influence of X-rays. (3) Formation of races in *Sporobolomyces*. The authors describe the regularities in the process of the dissociation of cultures of *Sporobolomyces* with the formation of new races described in a previous paper. The action of X-rays may produce organisms more complex than the original. For example, *Sporobolomyces* may be obtained from *Torula*, or from *Cryptococcus*. Forms with atavistic characters can also be obtained.—G. Nadson and E. A. Stern: The action of the ultra-violet and X-rays on the yeast cell. Both kinds of rays produce similar changes in the yeast cells, but the action of ultra-violet rays is more rapid than that of X-rays. The exposure results at first in an excitation, then in a depression, degeneration, and death. The rays act on the cell itself, not through the changes in the medium.—W. Tranzschel: An æcidium of *Puccinia pygmæa* Erikss. on *Berberis*. *Puccinia pygmæa* parasitic on *Calamagrostis* proved to be able to produce æcidia on *Berberis*. Differences of these æcidia from those of *P. graminis* are described. It is probable that *P. baryi* and *P. gibberosa* also produce æcidia on *Berberis*.—G. Vereschagin: The influence of Lake Baikal on the summer thermic régime of the river Angara. Determination of the temperatures of water in Lake Baikal and the river Angara flowing from it.—N. S. Smirnov: Two new species of Rotatoria from the Ussuri region. Descriptions of *Lepadella rezvoji* sp. n., and *Testudinella tridentata* sp. n.—S. Tchernov: The identity of *Gymnodactylus microlepis* Lantz and *G. fedtschenkoi* Strauch. Differences between the two species do not exceed the limits of individual variability in *G. fedtschenkoi*.

MELBOURNE.

Royal Society of Victoria, June 11.—Charles Oke: The Aculagnathidæ, a new family of Coleoptera.—W. J. Harris and R. A. Keble: Victorian graptolite zones, with correlations and descriptions of new species. Gives history in research in Victorian graptolithology, details of twenty zonal associations and tabulation, and an attempted correlation of zones with those of the northern hemisphere. Photographic illustrations of zonal species and descriptions of new species of zonal and subzonal importance include the following: *Diplograptus austrodentatus*, *Phyllograptus nobilis*, *Goniograptus palmatus*, *Brachiograptus etaformis*, gen. et sp.nov., *Didymograptus forcipiformis* Rued, and *D. dependulus*.—A. B. Edwards: The geology and petrology of the Black Spur area (Healesville). A series of acid igneous lavas (rhyolite and dacite) are mapped and described in this area. The lavas are intrusive into Silurian sediments and are considered as of Upper Devonian age. They include four varieties of dacite, one of which, a new Victorian type, contains phenocrysts of quartz and hypersthene. The dacites are part of a series associated with rhyolite and granodiorite. An explanation is given of the pyrogenetic reactions by which biotite is formed from hypersthene and also from ilmenite.

SYDNEY.

Royal Society of New South Wales, July 1.—C. A. Sussmilch: The Bathurst Senkungsfeld: The district immediately surrounding the town of Bathurst commonly known as the Bathurst Plains has an undulating surface with a general elevation of about 2400 ft. It is surrounded on all sides by higher tablelands. The change in elevation from the Bathurst region to the high tablelands surrounding it is everywhere an abrupt one, the dividing line being a well-marked scarp. It is considered that the scarps are fault scarps, and that the lower Bathurst block is a *Senkungsfeld* or 'sunk-land'. The most striking of these scarps is that separating the Mt. Lambie tableland from the Bathurst area. This consists of two faults with a combined throw of about 1700 ft. It is not considered that this area actually subsided, but that during the uplift which produced the existing tablelands, the Bathurst district lagged behind and was not uplifted as high as the surrounding regions. The Bathurst Senkungsfeld is drained by the Macquarie River, which leaves this lower area at its north-west corner by an almost impassable gorge which traverses the Orange tableland; the differential uplift was sufficiently slow to have enabled the Macquarie River to keep pace in cutting down its channel in the more rapidly uplifted Orange tableland.

VIENNA.

Academy of Sciences, July 9.—E. Beutel and A. Kutzelnigg: The deposition of sulphide films on metals.—A. Kailin and H. C. Hardt: The velocity of catalysed hydrogenation. Experiments were made with nickel precipitated on kieselgur as catalyst acting on the esters of cinnamic acid.—A. Zeller: Resistance experiments on red algæ. Mixtures of salts, isotonic with natural sea-water, but with one or more constituents missing, were used. The seaweeds were first immersed in the mixtures, then brought back into complete sea-water and the damage compared.—K. Brunner: New derivatives of 3·3-dimethylindolin.—H. Schober: The spectrum of rhenium. The arc spectrum in the visible region between λ5400 and λ8000.—K. Graff: The clearness of the winter sky during twilight on the island of Mallorca. K. Graff: Visual measurements of planetary colours. Various colours were met with from *B*7 (pure white) to *K*8 (red). Mars was one colour class redder, Uranus two classes bluer.—E. Dittler and O. Kühn: The genesis of bauxite in the Upper Sann valley. Bauxite is the last residue on solution of andesite.—Eleven separate communications follow from the Experimental Biological Institute; director, H. Przibram. These

concern the regeneration of limb-bones after operation on newts, and the regeneration of feet and antennæ after operation on locusts, etc.—(165). **L. Chen**: Regeneration of long bones after removal of one-third from within the limbs of the newt *Triton cristatus*.—(166) **L. Chen**: Regeneration after implanting of sixths of the femur of the salamander *S. maculosa* in the upper thigh of the newt *T. cristatus*.—(167) **J. Gebauer**: Autoplastic replacement of long bones in the limbs of *T. cristatus*.—(168) **H. Przibram**: Antenna and leg regeneration in the locust *E. herculeana*.—(169): Antenna and leg regeneration in the walking leaf insect *Phyllium siccifolium*.—(170): Antenna and leg regeneration in the European locust *Bacillus rossii*.—(171): Antenna and leg regeneration in the locust *Diapheromera femorata*.—(172): Antenna and leg regeneration in the locust *Dixippus morosus*.—(173) **H. Przibram and F. Friza**: Antenna and leg regeneration. Comparative inquiry on the position and rôle of Johnston's organ.—(174) **P. M. Suster**: Leg regeneration after extirpation of the ganglion in *Sphodromantis bioculata*.—(175) **P. M. Suster**: Antenna regeneration after extirpation of ganglion in *Sphodromantis bioculata*.—**P. Krüger and F. Fürlinger**: Histology and chemistry of tetanus and tonus substratum. It is suspected that the chemical metabolism of striated and smooth muscles may be different. Experiments have been made with frogs and analyses made of the phosphate and glucose contents of the different muscles.—**F. Duspiva**: The physiology of the melanophores of fish embryos.—**E. Schally**: The observation of streaks in chemical studies. (4) *D*-streaks and allied phenomena. When various liquids of like refractive indexes are mixed, transitory double-shaded streaks appear, depending in some cases on different velocities of diffusion.—**F. Hölzl and W. Stockmair**: The mobility of some iron-containing ions. Experiments on conductivity of nitro-prussides.—**F. Palm**: Geometrical research on graphical tables for the solution of complete cubic equations.—**K. Strubecker**: Cubic relations among non-Euclidean screws.—**G. Stetter and R. Premm**: Radium Institute Communication (279). Attempts to register $\alpha$-ray spectra of very weak intensity.—(280) **R. Premm**: Mass spectrum of the positive rays of thorium C.—(281) **F. Hecht**: Criticism of age determination by the lead method.—(282) **P. Krafft**: Absorption spectra of the *M*-series for the elements bismuth, lead, thallium, and gold.—(283) **M. Blau and E. Kara-Michailova**: The penetrating radiation of polonium.—(284) **M. Blau**: The fading of the latent image on exposure to $\alpha$-particles.—**H. Burchardt**: Regulation of the secretory activity of the seminal vesicle. Experiments on guinea-pigs and rats. The epithelial cells of the mucous membrane vary in height and width. Under pressure of undischarged semen they return to the resting stage.

## Official Publications Received.

BRITISH.

Cambridge Observatory. Annual Report of the Observatory Syndicate, 1930 May 19–1931 May 18. Pp. 3. (Cambridge.)

Live and Let Live: a Plea for the Preservation of Wild Life. Pp. 10. (Agra: Association for the Preservation of Game in the U.P.)

The University of Leeds. Report on the Department of Mining, Sessions 1928–30. Pp. 14. (Leeds.)

Uganda Protectorate. Annual Report of the Geological Survey Department for the Year ended 31st December 1930. Pp. 44. (Entebbe: Government Printer.)

FOREIGN.

Proceedings of the American Philosophical Society. Vol. 70, No. 2. Pp. 103-213. (Philadelphia.)

U.S. Department of Commerce: Bureau of Standards. Bureau of Standards Journal of Research. Vol. 7, No. 1, R.P. Nos. 329-338. Pp. 213. (Washington, D.C.: Government Printing Office.)

Journal of the Federated Malay States Museums. Vol. 16, Parts 3 and 4, July. Pp. 175-506. (Kuala Lumpur.)

Malayan Forest Records. No. 9: Growth of Malayan Forest Trees, as shown by Sample Plot Records, 1915-1928. By J. P. Edwards. Pp. ii+151. (Kuala Lumpur: Director of Forestry.) 2 dollars; 4s. 6d.

Collection des travaux chimiques de Tchécoslovaquie. Rédigée et publiée par E. Votocek et J. Heyrovský. Année 3, No. 7, Juillet. Pp. 333-378. (Prague: Regia Societas Scientiarum Bohemica.)

## Diary of Societies.

*FRIDAY*, SEPTEMBER 11.

INSTITUTE OF MARINE ENGINEERS. (As NATURE, Sept. 5.)

*TUESDAY*, SEPTEMBER 15.

LONDON NATURAL HISTORY SOCIETY (at London School of Hygiene and Tropical Medicine), at 6.30.—J. E. S. Dallas: Peasant Life in Alpine Districts.

*WEDNESDAY*, SEPTEMBER 16.

ROYAL AERONAUTICAL SOCIETY (at Science Museum, South Kensington), at 9.15 P.M.—Glenn Martin: The Development of Aircraft Manufacture (Wilbur Wright Memorial Lecture).

*FRIDAY*, SEPTEMBER 18.

FARADAY SOCIETY (at Chemical Society), at 5.30.—Prof. W. J. Müller: The Passivity of Metals.

### CONGRESSES.

SEPTEMBER 1 TO 19.

INTERNATIONAL ILLUMINATION CONGRESS. (For Programme see NATURE, Aug. 29.)

SEPTEMBER 6 TO 12.

INTERNATIONAL CONGRESS FOR TESTING MATERIALS. (For Programme see NATURE, Sept. 5.)

SEPTEMBER 9 TO 12.

INTERNATIONAL PROFESSIONAL ASSOCIATION OF MEDICAL PRACTITIONERS (at Budapest).

SEPTEMBER 13 TO 18.

INSTITUTE OF METALS. (For Programme see NATURE, Sept. 5.)

SEPTEMBER 13 TO 19.

INTERNATIONAL MEDICAL EDUCATIONAL CONGRESS (with special reference to Balneology) (at Carlsbad).

SEPTEMBER 16 TO 24.

INTERNATIONAL GEOGRAPHICAL UNION (at Paris).

SEPTEMBER 18 TO 20.

NATIONAL SMOKE ABATEMENT SOCIETY.

*Saturday, Sept.* 19, at 11 A.M.—R. Blackmore: The Progress of the Electrical Grid.

At 12 noon.—R. E. Gibson: Some Notes on the Production and Use of the New Smokeless Fuel 'Dryco' in Liverpool.

*Sunday, Sept.* 20, at 11 A.M.—Regional and Statutory Smoke Abatement Committees.

Councillor W. Asbury: The Sheffield, Rotherham and District Smoke Abatement Committee.

Dr. J. Johnston Jervis: The West Riding of Yorkshire Regional Smoke Abatement Committee.

Dr. J. Bennett: The Manchester and District Regional Smoke Abatement Committee.

The Greater London Joint Smoke Abatement Committee.

The Midlands Joint Advisory Council for Smoke Abatement.

SEPTEMBER 18 TO 21.

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX (at Lady Margaret Hall, Oxford).

*Friday, Sept.* 18.—H. T. Tizard: Presidential Address.

Prof. A. M. Carr-Saunders: Some Problems of Professionalism.

*Saturday, Sept.* 19.—E. N. Simons: How the Manufacturer can Help the Librarian.

B. M. Headicar: Practical Methods of Arrangement, Indexing and Routine in the Business Library and Information Bureau.

Col. Sir Frederic Nathan: International Abstracting and Indexing.

Dr. Albert Predeek: An Ever-Ready Printed Catalogue.

Annual General Meeting.

F. A. Hoare: Films as a Medium of Information in Education, Science and Industry.

*Sunday Sept.* 20.—Sir Francis Goodenough: The Report of the Board of Education Committee on Education for Salesmanship.

C. A. Macartney: The Publications of the I.L.O. and the League of Nations.

Miss Margaret E. Cleeve: The Library and Information Department of the Royal Institute of International Affairs.

J. P. Maxton: The Sources of Information in Agricultural Economics.

G. A. A. de Voogd: Documentation in Business Organisation.

Dr. E. Shenkman: The Russian Five-Year Plan in its special relation to British Industry and Commerce.

SEPTEMBER 23 TO 26.

INTERNATIONAL CLIMATOLOGICAL COMMISSION (at Innsbruck).