

Peace Prize was recently awarded. The date of departure from London is Aug. 5. Full particulars can be obtained from the Hon. Secretary, Mrs. Innes, 29 High Oaks Road, Welwyn Garden City.

Birthdays and Research Centres.

June 29, 1868.—Dr. G. E. HALE, For.Mem.R.S., honorary director of the Mount Wilson Observatory, Pasadena, California.

The spectroheliograph, spectroheliograph, and spectrograph of my solar laboratory are being used in several combinations for visual and photographic observations of the atmosphere and magnetic fields of the sun. A standard form of spectroheliograph will soon be in operation at twenty-five or more observatories distributed around the earth. A plan of co-operative research will deal primarily with the question whether auroræ, magnetic storms, and other geophysical phenomena are caused by solar eruptions, as certain observations and theories suggest.

The Astrophysical Observatory and Laboratory of the California Institute, conducted in close co-operation with the Mount Wilson Observatory, are in process of development. Experiments in manufacturing large mirror discs for the 200-inch telescope are under way, with good prospects of ultimate success. New auxiliary instruments, including correcting lenses, spectrograph objectives, and radiometers, when tested with the 60-inch and 100-inch reflectors on Mount Wilson, have greatly increased the efficiency and range of these telescopes.

June 29, 1885.—Prof. W. C. McCULLAGH LEWIS, F.R.S., professor of physical chemistry in the University of Liverpool.

The work which has been carried out for some years now in this laboratory belongs, in the main, to the field of bio-colloid chemistry, a branch of chemistry which is receiving considerable attention in various research centres. So far as our own programme is concerned, it may be said to include four lines of investigation: (1) The kinetics and energetics of coagulation or aggregation of typical colloid and other finely dispersed systems; (2) the physico-chemical aspects of denaturation of proteins; (3) the capillary behaviour of finely dispersed systems of biochemical importance, for example, the lipoids and proteins; (4) the kinetics and energetics of enzyme processes. In addition to the bio-colloid work, research in photo-chemistry and electro-chemistry is likewise being carried out by members of the staff.

July 2, 1862.—Sir WILLIAM BRAGG, O.M., K.B.E., F.R.S., director of the Royal Institution of Great Britain.

The determination of the crystal structure of organic substances is the chief object of research of my colleagues and myself in the Davy-Faraday Laboratory. Our particular object for the moment is the improvement of the apparatus and of the interpretation of the results. It seems that advance in the future will depend on observations of the relative intensities of the pencils of X-rays diffracted by a crystal. The crystals to be examined are generally very small, weighing only a fraction of a milligram. We have therefore been constructing powerful X-ray tubes which should give results plainly, accurately, and quickly.

At the same time various interesting crystals are under examination, and, in particular, the long chain compounds. The new X-ray tubes make it easy to observe certain remarkable effects as the substances are heated until they melt.

Societies and Academies.

LONDON.

Royal Meteorological Society, June 17.—S. Chapman: A theory of upper-atmospheric ozone. The paper consists of a discussion of the daily and annual variations of the ozone content of the atmosphere in any latitude up to about 50°. The ozone is treated as if it were uniformly spread through a layer of air 10 km. thick, having the same density as the air at the level of maximum ozone density. Convection and diffusion of ozone are neglected. The thermal decomposition of ozone ($2O_3 = 3O_2$) is discussed, and estimated to be negligible, except possibly in connexion with an eleven-year (sunspot) variation of ozone.—C. K. M. Douglas: On the relation between temperature and pressure in the troposphere. It is shown that the high correlation coefficients between pressure and temperature high up in the troposphere are closely related to the constancy of the lapse-rate of temperature. The correlations between the mean temperature of the column up to 9 km. and the temperatures at 3 and 6 km. are very high. Some factors tending to produce a constant lapse-rate are discussed. Groups of extreme cases show that when the barometer at sea level is very low or very high the troposphere contributes about half the deviation from the mean. Both cyclones and anticyclones can be grouped into systems largely confined to the troposphere, and systems extending to the stratosphere. The argument in favour of an advective theory is developed.

PARIS.

Academy of Sciences, May 4.—A. Cotton: The optical properties of a liquid placed in a magnetic field and traversed by a beam polarised in any direction. Remarks concerning the work of G. Dupouy and M. Schérer; with special reference to the installation.—Charles Nicolle: Distemper in dogs can be experimentally transmitted to man without apparent symptoms. Although man can act as a carrier of the distemper virus, no reaction of temperature or otherwise could be detected.—A. Fraenkel: An essential alternation of the axiom of choice.—W. Tartakowsky: The totality of numbers representable by a general quadratic or cubic indefinite form.—Mandelbrojt: Functions, holomorph and limited in a semi-plane.—Henri Cartan: A remarkable class of domains.—M. Pichot and P. Dupin: The distribution of the velocities of colloidal solutions presenting anomalies of viscosity. The flow of water and of a 0.7 per cent gelatine solution between parallel planes has been studied by the Camichel chronophotographic method, and curves are given showing the velocity as a function of the distance from the walls for each of these liquids. These curves prove the existence of a central portion flowing *en bloc* in the case of the gelatine solution.—Henri Mineur: Remarks on the mechanics of variable masses.—E. Huguenard: A method of mechanical inscription applicable to the recording and reproduction of sounds.—M. Pauthenier and Mme. M. Moreau-Hanot: The cylindrical ionised field and the duration of the path of the ions.—V. Dolejšek: The ultra-soft X-rays. A modification of Osgood's method was used. The most intense line obtained was a doublet with an approximate wavelength of 480° A.—G. Dupouy and M. Schérer: The combination of the simultaneous optical effects of magnetic rotary polarisation and magnetic double refraction in a liquid.—Jean Becquerel and Louis Matout: The combined effects of the internal electric field of a uniaxial crystal and of a magnetic field normal to the optic axis. Variations of the

components of the absorption bands of the ordinary spectrum according to the relative orientations of the incident vibration, of the binary axes, and of the magnetic field. Circular polarisation and magneto-electric rotary power.—R. Gibrat: The optics of uniaxial heterogeneous structures.—Guichard, Clausmann, Billon, and Lanthony: New data relating to the independence of the hardness and hydrogen content of electrolytic metals. Reply to criticisms by L. Guillet and J. Cournot: Fresh experimental evidence is given in support of the authors' views.—Augustin Boutaric and Maurice Doladilhe: The adsorption of colouring matters by the granules of a hydrosol.—Georges Fournier and Marcel Guillot: The absorption of the β -rays by matter.—Mme. Irène Curie: The complexity of the α radiation of radio-actinium.—F. Joliot: The phenomenon of recoil and the conservation of the quantity of motion. The author has repeated Akiyama's experiment and has obtained similar phenomena, but considers unnecessary the hypothesis of an emission of a γ radiation of very great energy.—L. Bert and R. Annequin: The action of phosphorus pentachloride upon ω -chlorallyl benzene derivatives. The action of phosphorus pentachloride upon compounds of the type $R.C_6H_4.CH_2.CH:CHCl$ furnishes a good method for obtaining $C_6H_5.CH_2.CHCl.CHCl_2$ and its homologues.—Sébastien Tabetay: On ω,ω' -dichloroparaxylene, *p*-diethylbenzene, and *p*-divinylbenzene.—Mlle. M. Montagne: The action of organomagnesium compounds on *N*-diethylacetamide.—C. Gaudfroy: The orientation of crystals, and of quartz in particular, with the aid of corrosion figures.—F. Holweck and P. Lejay: Improvements in a transportable instrument for the rapid measurement of gravity. The portable type of instrument described and illustrated is an improved form of one described in an earlier communication. After being carried 2000 kilometres in a motor car, without special precautions, its accuracy was unaffected.—Ladislas Gorczynski: Some measurements of the diffused solar radiation obtained with solarimeters in the Maritime Alps.—Chung-Hwang Chow: The development of the carpophore in *Coprinus tormentosus*.—M. Bridel and R. Lavielle: The sweet principle of the leaves of *Kaa-hé-é* (*Stevia Rebaudiana*). The dry leaves contain 6 per cent of the glucoside, stevioside. This is very sweet, about 300 times as sweet as cane-sugar. It is not hydrolysed by emulsin, rhamnodiastase, yeast or by powdered *Aspergillus niger*, but 5 per cent sulphuric acid acting for three hours at 100° C. gives α -glucose and a substance, steviol.—F. Fouraire: A new myxosporidium of the genus *Chloromyxum* observed in the carp.—P. Lépine: The separation of the antagonistic sexual hormones in extracts of the anterior lobe of the hypophysis.—A. Leulier and B. Drevon: The action of the blood serum on morphine chlorhydrate in the presence of hydrogen peroxide. Oxydimorphine has been proved to be formed under these conditions.—Ch. Dhéré and M. Fontaine: The fluorescence spectra of the phycocromoproteids studied in solution and in a living alga.—J. Magrou, Mme. M. Magrou, and E. Roubaud: The stimulating action at a distance exercised by certain bacterial suspensions, through quartz, on the eclosion of the mosquito of yellow fever.—J. Parrod: The formation of *a*-arabinotetroxybutyl-4-imidazol at a low temperature, starting with glucose and with levulose in a solution of ammoniacal cupric hydroxide.—Armand Dehone: New observations on the generalised plasmodium and the merozoite cysts of *Sabellaria spinulosa*.—Ugo Lumbroso and Mlle. H. Van Sant: New strains of bacteria isolated from north African cases of trachoma following Noguchi's technique. Three strains of

bacteria have been isolated, A, B, and C. Of these, type A differ essentially from the *B. granulorum* of Noguchi in the appearance of the colonies, their consistence, their golden yellow pigment, and the absence of fermenting power towards certain sugars attacked by *B. granulorum*. Type B, and especially type C, show still greater differences.—C. Levaditi, J. Bardet, A. Tchakirian, and A. Vaisman: *Gallium*, its therapeutic properties in syphilis and the experimental trypanosomiasis. *Gallium* has a marked preventive and curative action in syphilis and certain trypanosomiasis.

CAPE TOWN.

Royal Society of South Africa, Mar. 18.—R. A. Dart and Nino del Grande: The ancient iron-smelting cavern at Mumbwa.—R. S. Adamson: On a new species of *Aristea*.—H. Zwarenstein and I. Schrire: The effect of castration upon protein metabolism. Total castration of male rabbits leads to an increase in weight and to a 25-40 per cent increase in creatinine excretion 3 months after operation. Grafting of testes caused a return to normal within a fortnight. The creatinine excretion of a female rabbit showed a 20 per cent decrease 3 months after removal of the ovaries.—M. Fortes: Perceptual tests of general intelligence for international use.—Sir Thomas Muir: (a) Note on equalities connecting two sums of squares. (b) Note on a special alternant of three variables.—J. F. V. Phillips: A sketch of the floral regions of Tanganyika Territory.

LENINGRAD.

Academy of Sciences (*Comptes rendus*, No. 18, 1930).—N. Zelinsky and M. Rakuzin: A new simplified procedure for the manufacture of sulphuric acid from plaster of Paris. Calcium sulphate can be converted, by boiling with ammonium carbonate, into ammonium sulphate and the latter electrolysed to produce sulphuric acid.—A. Arkhangelskii and E. Salmanson: A note on the diagenesis of the marine argillaceous deposits. The chemical side of the processes connected with the interaction of particles of soil and the sea water is discussed.—L. Broude and V. Gulevitch: The use of Buchner's press for the studies of animal extractive substances. The press can be applied successfully in qualitative studies on extractive substances from muscles, but the amount of the extract is never complete and the method cannot be recommended for quantitative studies.—V. Nikolaeve and S. Kosmann: On the boracic acid of the Tchokrak salt lake. Analyses of the lake water.—N. Achyevser: (1) On certain polynomials of minimum deviation. (2) On the extremal proprieties of certain fractional functions.

SYDNEY.

Linnean Society of New South Wales, Mar. 25.—Germaine A. Joplin: Petrology of the Hartley District. (1) The plutonic and associated rocks. The plutonic rocks at Hartley occur as a portion of a large bathylith, and in two stocks, each of which is about one mile in diameter. Hypabyssal rocks occur in the form of dykes and apophyses associated with the bathylith. A number of different types, ranging from ultra-acid to ultra-basic, have been described, and mineralogical and chemical evidence points to consanguinity among them. The complex forms a typical calcic, or sub-alkaline suite, and is comparable to one of similar age at Moruya. It is probable that the various types have been developed as a result of fractional crystallisation in an intercrustal reservoir, followed by separate injections of the fractions, and differentiation *in situ*. The plutonic rocks are intrusive into Upper Devonian sediments, and are overlain by Permo-Carboniferous Upper Marine beds.

The series is comparable to other complexes of Devonian age, and, therefore, probably belongs to the Kainmbia epoch of igneous intrusion.—G. H. Cunningham: The Gasteromycetes of Australasia: (10) The Phallales. (1) Following a discussion concerning the morphology of the order, an account is given of the development of three representatives of the genera, *Mutinus*, *Ithyphallus*, and *Dictyophora* respectively. A key to the genera is given, and the species occurring in this biologic region (five in all) are discussed in detail. Critical notes are appended as to the generic limits and to the specific characters of the Australian representatives of this family. A complete synonymy of the species and genera under discussion is appended.—J. R. Malloch: Notes on Australian Diptera (27). This paper contains a complete catalogue of the described Australian species of the family Chloropidae, with a generic key to the subfamily Chloropinae and descriptions of thirteen new species, with notes on several described species, a survey of the characters of the family Milichidae, with a key to the Australian species of the genus *Milichiella* and descriptions of two new species, and some notes on three recently described species of the genus *Rutilia* of the family Tachinidae.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, Vol. 17, No. 2, Feb. 15).—Henry Borsook and Howard M. Winegarden: On the specific dynamic action of protein. A survey of recent experimental work, with reference to the literature. It is suggested that the specific dynamic action of protein parallels the course of nitrogen excretion and results from at least two processes, the work imposed on the kidney and the metabolism of the nitrogen and the carbon, the latter being the specific dynamic action proper.—Perry Byerly: The California earthquakes of Nov. 28, 1929, and the surface layers of the earth in California. These two earthquakes were recorded by several observatories near the epicentre. Both the direct and indirect *P* waves were identified, and a method allowing of the accurate calculation of the depth of focus was used. The epicentre was at lat. 37° 31' N., long. 119° 2' W., the focus was at a depth of 5 km., and the granitic layer in the region is 20–25 km.—Clyde E. Keeler: The independence of dominant spotting and recessive spotting ('piebald') in the house mouse.—H. C. Ramsperger and G. Waddington: The interpretation of the thermal decomposition of nitrous oxide. Data of all known unimolecular actions are included.—Wilder D. Bancroft and J. E. Rutzler, jr.: Reversible coagulation in living tissue (1). Intravenous injections of sodium thiocyanate solutions bring rabbits out of the unconsciousness due to ether, amytal, or morphine more rapidly than is normal, can prevent death from strychnine or histamine, and can prevent anaphylactic shock in rabbits sensitised with egg-white sol. Potassium salts cannot safely be substituted for sodium salts, because of their greater toxic action. It is considered that since sodium thiocyanate peptises proteins, its effect is to counteract disturbances due to coagulation of nerve proteins; this supports Claude Bernard's view that anaesthesia is due to coagulation of nerve colloids.—Tracy Yerkes Thomas: On the unified field theory (4). A consideration of the so-called geodesics of zero length which give the light tracks in the Einstein theory of gravitation.—Leonard Carlitz: The arithmetic of polynomials in a Galois field.—Hassler Whitney: (1) On the colouring of graphs.—(2) Non-separable and planar graphs.—Francis D. Murnaghan: The principle of Maupertuis.—A. D. Michal: Notes on scalar extensions of tensors and properties of local co-ordinates.

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Official Publications Received.

BRITISH.

- Ministry of Agriculture and Fisheries. Marketing Leaflet No. 30: Litter Testing and Pig Recording; Interim Report by the Pig Industry Council. Pp. 8. (London: Ministry of Agriculture and Fisheries.)
- Department of Scientific and Industrial Research. Building Science Abstracts. Vol. 4 (New Series), No. 4, April. Abstracts Nos. 685-747. Pp. 107-146. (London: H.M. Stationery Office.) 9d. net.
- Air Ministry: Aeronautical Research Committee. Reports and Memoranda. No. 1361 (E. 43—I.C.E. 761, 790): Carburettor Fuel Metering Characteristics. By W. C. Clothier. Pp. 12+15 plates. (London: H.M. Stationery Office.) 9d. net.
- Proceedings of the Royal Irish Academy. Vol. 40, Section B. No. 2: Contributions to the Fungus Flora of Ulster. By Arthur E. Musket, E. Norman Carrothers and Hugh Cairns. Pp. 37-55. 6d. Vol. 40, Section B, No. 3: Further Studies in the Pigment of the Berry of the Elder (*Sambucus nigra* Linn.). By Thomas J. Nolan and Hyacinth M. T. Casey. Pp. 56-66. 6d. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.)
- Transactions of the Institute of Marine Engineers, Incorporated. Session 1931, Vol. 43, No. 4, May. Pp. 157-202+xliv. (London.)
- Journal of the Chemical Society. May. Pp. iv+1033-1814+x. (London.)
- Proceedings of the Geologists' Association. Edited by A. K. Wells. Vol. 42, Part 1, May 28th. Pp. 85. (London: Edward Stanford, Ltd.) 5s.
- The International Commission on Illumination. The Origin, Organisation and Work (with Appendices). Pp. 24. (London: The International Illumination Congress.)
- The University of Sheffield. Report on Research Work carried out in the Departments of Mining and Fuel Technology during the Session 1929-30. Pp. 14. (Sheffield.)
- City of Birmingham: Education Committee. Selection of Skilled Apprentices for the Engineering Trades: Report of Research. By E. Patricia Allen and Percival Smith. Pp. iv+85. (Birmingham.)
- The British South Africa Company. Publication No. 1: The South African Citrus Thrips in Southern Rhodesia. By Dr. W. J. Hall. Pp. 56+8 plates. (London and Salisbury: The British South Africa Co.)
- Paleontologische Navorsing van die Nasionale Museum, Bloemfontein. Deel 1, Stuk 2: Die Krytfauna van Soeloeland. 2: Voorlopige Beskrywing van enige Soeloelandse Ammoniete. 1. Lophoceras, Rhytidoceras, Drepanoceras en Deiradoceras. Deur Dr. Ir E. C. N. Van Hoepen. Pp. 39-54. (Bloemfontein.)
- Mines Department: Safety in Mines Research Board. Paper No. 66: Haulage Accidents in Coal Mines. Report of the Haulage Committee of the Safety in Mines Research Board. Pp. 20. (London: H.M. Stationery Office.) 6d. net.
- Ten Years of Research for the Metal Industries: a Brief Record of Progress made by the British Non-Ferrous Metals Research Association, 1920-1930. Pp. 30. (London.)
- The League of Science (The Science Party). Report on Preliminary Work and Activities from 11th November 1929 to 1st May 1931. Pp. 8. (London.)
- Brighter Biochemistry: being the Illustrated Journal of the Biochemical Laboratory, Cambridge. No. 8, May. Pp. 38. (Cambridge.) 2s.
- National Health Insurance. Memorandum on Certification of Incapacity for Work, giving the Results of Recent Investigations as to the Causes of Increase of Claims to Sickness and Disablement Benefit. (Memo. 329/I.C.) Pp. 31. (London: Ministry of Health.)
- Navy: Hydrographer's Report. Report on Admiralty Surveys for the Year 1930 by the Hydrographer of the Navy. Pp. v-x. (London: Admiralty.)
- The Quarterly Journal of the Geological Society of London. No. 246, Vol. 87, Part 2, May 29th. Pp. 179-375+lxiv. (London: Longmans, Green and Co., Ltd.) 7s. 6d.
- Empire Cotton Growing Corporation. Report of the Tenth Annual General Meeting. Pp. 16. (London.)
- Proceedings of the Royal Society. Series A, Vol. 131, No. A818, June 3. Pp. 517-703+xxx. (London: Harrison and Sons, Ltd.) 10s.
- Apia Observatory, Apia, Western Samoa. Report for 1927. Pp. 86. (Wellington, N.Z.: W. A. G. Skinner.)
- Records of the Botanical Survey of India. Vol. 13, No. 2: A Census of Indian Mosses, with Analytical Keys to the Genera referred to in the Census as well as all the Genera dealt with in the second edition of Prof. Brotherus' account of the Musci Veri in Engler and Prantl's "Pflanzenfamilien". By P. Bruhl. Pp. v+152. (Calcutta: Government of India Central Publication Branch.) 2.12 rupees; 5s.
- Report of the Astronomer Royal to the Board of Visitors of the Royal Observatory, Greenwich, read at the Annual Visitation of the Royal Observatory, 1931 June 6. Pp. 17. (Greenwich.)
- Imperial Bureau of Plant Genetics (for Crops other than Herbage). Papers on Plant Genetics received from January to June 1930. Pp. 23.
- Papers on Plant Genetics, Vol. 1, No. 2. Pp. 36. Plant Breeding Abstracts, Vol. 1, No. 3. Pp. 52. (Cambridge: School of Agriculture.)
- Canada: Department of Mines: Mines Branch. The Mining Laws of Canada: a Digest of Dominion and Provincial Laws affecting Mining. (No. 713.) Revised edition. Pp. v+98. 25 cents. Investigations in Ore Dressing and Metallurgy (Testing and Research Laboratories) 1929. (No. 720.) Pp. ii+208. (Ottawa: F. A. Acland.)
- Report of His Majesty's Astronomer at the Cape of Good Hope to the Secretary of the Admiralty for the Year 1930. Pp. 9. (Cape of Good Hope.)
- County Borough of Halifax. Bankfield Museum Notes, Second Series, No. 12: Methods of Hand Spinning in Egypt and the Sudan. By Grace M. Crowfoot. Pp. 51+44 plates. (Halifax.) 3s.
- Ministry of Agriculture and Fisheries: Department of Agriculture for Scotland, and Ministry of Agriculture for Northern Ireland. Reports on the Work of Agricultural Research Institutes and on certain other Agricultural Investigations in the United Kingdom, 1929-1930. Pp. 280. (London: Ministry of Agriculture and Fisheries.) 1s. net.