

### Birthdays and Research Centres.

Aug. 7, 1864.—Mr. OSWALD H. LATTEr, formerly senior science master at Charterhouse.

An investigation of the action of certain chemical substances in stimulating dormant storage organs of plants to activity—for example, ethylene chlorhydrin in the case of *Gладиолус* corms, potassium sulphocyanide in the case of potato tubers—might lead to valuable results.

Aug. 7, 1886.—Prof. P. G. H. BOSWELL, F.R.S., professor of geology in the University of London, Imperial College of Science and Technology, S.W.

To select for special mention from among the various branches of pure geology, oil technology, and mining geology is not easy in a department where students bring problems from many parts of the world and where more than thirty subjects of research are in progress. Detailed observations on the constitution, arrangement, and fossil contents of strata, for example, must proceed; as also the exploration of unknown or little known regions. By these means alone can we fill in the many gaps in the geological record and discover new links in the chain of life.

It is important, however, that the inductive methods of experimental research should be employed side by side with analytical investigations. Hence our aim at the Imperial College is to continue research on such problems as the rôle of water and other mineralisers in the genesis of igneous rocks and metallic ores; the imperfectly understood processes in the formation of clays; and the natural history of sedimentary rocks, both as a problem in pure geology and in its bearing on the origin of petroleum.

Aug. 8, 1857.—Prof. HENRY FAIRFIELD OSBORN, For.Mem.R.S., research professor of zoology in Columbia University and honorary curator of vertebrate palæontology in the American Museum of Natural History.

I began field study of palæontology in the of August, 1876. I initiated the field explorations from the American Museum in 1891 and became fascinated with the origin and evolution of the proboscideans in 1899, leading to the Fayum Expedition of 1907, in turn to the increasingly intensive study of the evolution of the mastodont, stegodont, and elephantine divisions, especially since the year 1920, when the text of the Titanotheres Monograph was completed and sent to the United States Geological Survey for printing. Both stegodonts and elephants have been close travelling companions of man for at least 1,250,000 years, and recently a most interesting discovery has been made that intensive measurement of the ridge plates of the grinding teeth of the proboscideans promises to afford a new and very precise means of dating not only the stegodonts and elephants but also their companion, hunter, and destroyer, prehistoric man.

Aug. 9, 1880.—Prof. M. GREENWOOD, F.R.S., professor of epidemiology and vital statistics in the University of London.

I am at present engaged on the statistical analysis of data of epidemics occurring in groups of mice, with particular reference to the mechanism and quantitative measure of immunisation against bacterial and virus diseases.

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Aug. 10, 1865.—Col. Sir CHARLES F. CLOSE, K.B.E., C.B., C.M.G., F.R.S., chairman of the Palestine Exploration Fund; president of the International Population Union; president of the Hants Field Club; formerly president of the Royal Geographical Society.

Three groups of subjects are now of special interest to me. Now that Great Britain has the mandate for Palestine, all possible help should be given to the Palestine Exploration Fund and the British School of Archaeology in Jerusalem; and it is most desirable that the headquarters and museum of the Fund should become a real centre and focus of information with regard to the history and archaeology of Palestine. Secondly, it is to be hoped that the International Map of the World will make more rapid progress; though much has been done, some countries are lagging behind. In a similar geographical field, a comprehensive English text-book on map projections is badly needed. The admirable 'Germain' is much out of date. Thirdly, all interested in the subject should assist the International Union for the Study of Population Problems and the British National Committee of the Union. The Union is not propagandist and its work is purely scientific.

Aug. 11, 1895.—Dr. C. D. ELLIS, F.R.S., fellow of Trinity College and lecturer in physics in the University of Cambridge.

I am engaged in investigating the  $\beta$ - and  $\gamma$ -ray type of radioactive disintegration. Recent work has shown that there is a close connexion between the energy differences of the  $\alpha$ -particle levels in the nucleus and the frequencies of the emitted  $\gamma$ -rays, and it seems a point of importance to ascertain accurately the intensities of the different  $\gamma$ -rays in order to establish correlation in this connexion also with the  $\alpha$ -particles.

A further point of great interest which can be conveniently studied by the same type of experiment is the direct coupling between the nucleus and the electronic system which is shown by the so-called 'internal conversion' of the  $\gamma$ -rays.

### Societies and Academies.

#### DUBLIN.

Royal Dublin Society, June 24.—A. W. Conway: The influence of the work of Sir William Rowan Hamilton on modern mathematical thought. Hamilton's mathematical work may be divided chronologically into four groups: optics, dynamics, general, and quaternions. His work on optics is dominated by his idea of the 'characteristic function' and his grasp of the fact that this had application either to a wave or to a corpuscular theory of light, representing principles of least (or greatest) time and least (or greatest) action, respectively, on the two theories. His application of the principle of varying action put the whole of dynamics on a new footing, and his methods are to-day freely used.—Phyllis Clinch: Cytological studies of potato plants affected with certain virus diseases. A histological and cytological study was made of the mosaic diseases of the potato designated simple and interveinal mosaic, crinkle, streak, and aucuba mosaic. The leaf modifications which underlie the mottling arise in part from underdevelopment of the mesophyll, from a reduction in the number and size of the chloroplasts, and from a paler colour of the chlorophyll. In aucuba mosaic the mottling is almost entirely due to the disintegration of the chloroplasts. Intra-cellular structures of the 'X-body' type occur in all the diseases mentioned,

except aucuba mosaic, and in the case of streak only in the early stages. This study tends to emphasise the similarity of all the potato mosaics, except aucuba mosaic, and indicates that streak belongs to the mosaic group.—W. R. G. Atkins: Radiation and life. In view of the importance of an adequate degree of illumination for most species of plant and animal life, convenient methods of measuring daylight in various sites on land and in the sea are of considerable utility. Many such measurements have been made by the author and by others using various methods, of which, for general work, the photoelectric cell is, perhaps, the most convenient. Some of the methods used and the results obtained are discussed.

## PARIS.

Academy of Sciences, June 8.—H. Deslandres: Simple relations between the molecular spectrum and the structure of the molecule. It is shown that apart from any special theory, and working with experimental data only, the molecular infra-red spectrum depends on whole numbers, and may furnish useful indications on the structure of the molecule.—Georges Claude: Human respiration in enclosed spaces under reduced pressure.—Jean Baptiste Senderens: The comparative hydration of sulphuric acid and of the alkaline bisulphates; its relations with the catalytic activity. The fact that potassium bisulphate treated with air saturated with moisture is hydrated more slowly than sodium bisulphate under the same conditions, is regarded as explaining why sodium bisulphate is a more active catalytic agent towards alcohols than potassium bisulphate.—Paul Pascal and Mlle. Bernheim: The study of a mode of transformation of calcium cyanamide into cyanide.—Edgar Baticle: The probabilities relating to intermittent phenomena of variable duration.—Alfred Rosenblatt: The unicity of partial differential equations of the first order.—C. E. Winn: The limits depending on the means of Hölder and Cesàro.—Nikola Obrechhoff: The summation of Dirichlet's series.—J. Le Roux: The invariant expression of the law of gravitation.—E. Callandreau: Approximate solutions of the lines of rupture in a pulverent massif.—Pierre Dive: The attraction of homogeneous ellipsoids.—G. Chapas: The heats of solution of benzoic acid in toluene.—M. Haissinsky: The electrochemical and chemical behaviour of polonium in tartaric acid solution. The experimental results are best explained by assuming that the polonium is combined with the tartaric acid in the form of a soluble complex compound, slightly stable and easily hydrolysable.—Nahmias: The fluctuation of the path of the  $\alpha$ -ray of polonium in different gases.—Mme. Irène Curie and Marcel Lecoq: A new gaseous compound of polonium. When polonium, deposited on a nickel needle, is heated in a current of nitrogen, practically the whole of the polonium is deposited in the cooler part of the tube. But if the nitrogen is replaced by a mixture of carbon monoxide and dioxide in equal volumes, about one half of the metal appears to be converted into a gaseous compound, possibly a polonium carbonyl similar to nickel carbonyl.—Georges Allard: Electrical moments and molecular constitution.—W. Swietoslowski: A boiling point apparatus for examining the purity of liquid chemical individuals.—L. Lematte, G. Boinot, E. Kahane, and Mme. M. Kahane: The use of a nitroperchloric mixture for the estimation of silica in vegetable substances. Details of the method, for which both rapidity and accuracy are claimed, are given.—Sou Phou Ti: The action of ethylmagnesium bromide on *N*-diethylmonochloracetamide. An unusual transposition takes place in this reaction, the alcohol pro-

duced proving to be  $(C_2H_5)_2 \cdot N \cdot CH_2 \cdot C(OH) \cdot (C_2H_5)_2$ . Suggestions for the probable course of the reaction are given.—J. Hock: The synthesis of some derivatives of arylacetic and  $\beta$ -arylpropionic acids.—Raymond Delaby and Mme. S. Guillot-Allègre: The  $\alpha$ - $\beta$ -ethylene aldehydes with a linear chain.—Agostino Puppo: The storm of July 24, 1930, in the Treviso-Udine district. The damage done by this storm, stated to be the most violent ever observed in Europe, is described. It included destruction of houses, high tension cables, animals, and trees. Human beings were lifted up and carried several hundred metres. The maximum velocity was calculated at 80 metres per second.—A. Duparque: The microscopic structure and origin of coking coals and bituminous coals.—P. Lavalie and P. Jaeger: The origin of fruit in its relations with pollinisation in *Knautia arvensis*.—Fernand Moreau and Mlle. C. Morwzi: Experimental researches on the formation of the perithecium in *Neurospora*.—C. Charaux and J. Rabaté: Contribution to the biochemical study of the genus *Salix*. A new glucoside, salipurposide, hydrolysable by emulsin, extracted from the bark of *Salix purpurea*. The new glucoside has the composition  $C_{21}H_{22}O_{10}$ ; on hydrolysis it gives glucose and a substance salipurpol,  $C_{15}H_{12}O_5$ .—Pierre Gavaudan and Robert Cazalas: Some teratological phenomena observed during the spermatogenesis of the Characæ.—E. Miège: Strains with polycarpous flowers in a hybrid of *Triticum vulgare*.—P. Regnier, L. Lespes, and C. Rungs: The habitat of *Schistocerca gregaria* and the succession of generations in this species.—A. M. Monnier: A piezoelectric myograph. Its application to the analysis of the isometric jerk of muscles.—Jules Amar: The importance and the signification of the vital capacity.—Mlle. E. Lebreton, and F. Mocorroa: The number and nature of the proteolytic ferments of the pancreatic juice. The author concludes from the experiments described that the pancreatic juice as secreted contains, besides prokinase, only the tryptic ferments inactive proteinase and directly active carboxyl-peptidase. The ereptic ferments found in the glycerol extracts of pancreas are endocellular and do not normally pass into the juice.—J. Cayrol and L. Genevois: The specific inhibition of the alcoholic fermentation of yeast cells without arrest of the respiration, of the Pasteur-Meyerhof reaction, or of growth. A repetition of Lundsgaard's experiment, with the substitution of monobromacetic acid for iodacetic acid, the former being more active and less toxic. Bromacetic acid in the proportion of 14 mgm. per litre completely inhibits fermentation without interfering with respiration, growth, or the Pasteur-Meyerhof reaction.—Ch. Dhéré: The fluorescence spectrum of protochlorophyll.—Mlle. D. Van Stolk, J. Guilbert, H. Penau, and H. Simônnet: Pure carotene and vitamin A. Full details of the methods of extraction and purification of carotene are given. It is concluded that very pure carotene is capable of maintaining weight equilibrium in the rat and of preventing phenomena of avitaminosis from developing in that animal.—Cl. Fromageot: The origin of the energy put at the disposal of micro-organisms in the course of the fermentation of the hexoses.—Denier la Tour du Pin: The elective fixation of medicinal ions by the electromagnet. The electromagnet can be used to direct the ions to spots accessible with difficulty; clinical results proving the efficacy of the method are given.—Georges Blanc and J. Caminopétros: The virus of exanthematic fever obtained from the blood of patients or from the organism of the tic is filtrable.—Fréd Vlés, Mlle. Marguerite Prager, and Nissen Bernstein: The relations between the isoelectric points of human serum and its alexic power.

## CAPE TOWN.

Royal Society of South Africa, May 20.—E. L. Halliday: Correlations between the field changes due to lightning and the appearance of the flashes. A preliminary note upon certain results obtained in investigation of the polarity of thunderstorms in the Transvaal. Photographic records of the field changes due to lightning discharges have been combined with visual and photographic observations of the flashes. Of 273 flashes between the base of the cloud and the ground, 257 gave positive field changes and 16 gave negative field changes. Of 173 positive field changes at distances greater than 7 km., 159 were due to flashes to ground. Of 164 discharges within the cloud at distances greater than 7 km., 150 gave negative changes of field.—J. Schonland and C. A. Coppens: Point discharge measurements below thunderstorms. The arrangement used by the authors in Johannesburg and Graaff-Reinet utilises a suitably insulated point and a portable galvanometer. Its simplicity lends itself to the collection of statistical data on the sign and order of magnitude of the fields and field-changes. The arrangement leaves the observer fairly free to note the meteorological features and the distance of the storm.—M. Rindl: The alkaloids of the bark of *Strychnos henningsii*. Two alkaloids have been isolated, a crystalline and an amorphous one. The present paper deals with the methods adopted to isolate the amorphous alkaloid and the endeavours to obtain the base itself, or derivatives of it, in a crystalline form.

## SYDNEY.

Royal Society of New South Wales, May 6.—O. U. Vonwiller (presidential address): A generation of electron theory. A review of developments in atomic and light theory since the 'isolation' of the electron, with special reference to the accompanying changes in the philosophic outlook of the physicist from the deterministic view general at the end of the nineteenth century to the uncertainty and probability principles of to-day. It is emphasised that the wave theory of light cannot be regarded as more than a convenient hypothesis in terms of which certain phenomena can be reconciled. Light-waves may be considered as a mathematical device which can be used to express the probability of the presence of photons just as de Broglie waves can be used with electrons. The evidence for the objective reality of the waves is no greater in one case than in the other.

## Official Publications Received.

## BRITISH.

- City of Leicester: Museum and Art Gallery. Twenty-seventh Report to the City Council, 1st April 1930 to 31st March 1931. Pp. 32. (Leicester.)
- Sanatoria. List of Sanatoria and other Residential Institutions approved by the Minister of Health for the Treatment of Persons suffering from Tuberculosis and resident in England and Wales, with the names of the Administrative Counties and County Boroughs in which the Institutions are situated. List 10(d). Pp. 24. (London: H.M. Stationery Office.) 4d. net.
- Imperial Bureau of Plant Genetics: Herbage Plants. Herbage Extracts, 1931. Vol. 1, No. 1, June. Pp. 39. 1s. 6d. Bulletin No. 3: The Breeding of Herbage Plants; Technique adopted at the Welsh Plant Breeding Station. Pp. 77+3 plates. 3s. (Aberystwyth.)
- Empire Survey Review. Vol. 1, No. 1, July. Pp. 48+ xviii. (London: The Crown Agents for the Colonies.) 3s.
- City of Leicester Municipal Libraries. Fifty-second Report to the City Council, 1st April 1930 to 31st March 1931. Pp. 20. (Leicester.)
- The Proceedings of the Physical Society. Vol. 43, Part 4, No. 239, July 1. Pp. viii+371-460. (London.) 7s. net.
- Air Ministry: Aeronautical Research Committee: Reports and Memoranda. No. 1375 (E. 47—G. 35, 39 and a): Possible Cause of Aircraft Fires on Crash. By W. G. Glendinning; with an Appendix by Staff of the Engine Department. Pp. 19+6 plates. 1s. net. No. 1355 (Ae. 404): The Flutter of Monoplanes, Biplanes and Tail Units (A Sequel to R. and M. 1155). By R. A. Frazer and Dr. W. J. Duncan. Pp. viii+179+12 plates. 7s. 6d. net. (London: H.M. Stationery Office.)

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Proceedings of the Royal Society of Edinburgh, Session 1930-1931. Vol. 51, Part 2, No. 14: Male Haploidy and Female Diploidy in *Sirex cyaneus* F. (Hymen.). By Prof. A. D. Peacock and Dr. R. A. H. Gresson. Pp. 97-103+1 plate. 1s. Vol. 51, Part 2, No. 15: Some New Facts about the Structure of the Cuticles in the Russian Paper-Coal and their Bearing on the Systematic Position of some Fossil Lycopodiales. By Jessie A. R. Wilson. With a Note on the Absence of Elongate Heterosporous Lycopodiales in the Fossil-Record, by Dr. John Walton. Pp. 104-115+1 plate. 1s. 3d. Vol. 51, Part 2, No. 16: Fourier Integrals. By T. M. MacRobert. Pp. 116-126. 1s. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)

The Scientific Proceedings of the Royal Dublin Society. Vol. 20, N.S., Nos. 1-7: A Modified Form of Radon Capillary Apparatus, by Dr. H. H. Poole; The Exudation of Water from the Leaf-tips of *Colocasia antiquorum*, Schott., by Prof. Henry H. Dixon; The Application of Gamma Radiation to Deep-seated Tumours, II, by Dr. J. Joly; Photo-electric Measurements of Illumination in relation to Plant Distribution, Part 4: Changes in the Colour Composition of Daylight in the Open and in Shaded Situations, by Dr. W. K. G. Atkins and Dr. H. H. Poole; Observations on the Photo-electric Measurement of the Radiation from Mercury Vapour Lamps and from the Sun, and on the Effects of such Radiation upon the Skin, by Dr. W. R. G. Atkins; Some Experiments on the Accuracy obtainable with Gas-filled Photo-electric Cells, by Dr. W. R. G. Atkins; A Method of distinguishing certain Strains of New Zealand Perennial Ryegrass (*Lolium perenne*, L.) by examination of Seedlings under Screened Ultra-violet Light, by P. A. Linehan and S. P. Mercer. Pp. 83+2 plates. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 7s.

The Journal of the Institution of Electrical Engineers. Edited by P. F. Rowell. Vol. 69, No. 415, July. Pp. 805-932+xxvi. (London: E. and F. N. Spon, Ltd.) 10s. 6d.

Summary of Progress of the Geological Survey of Great Britain and the Museum of Practical Geology for the Year 1930. Part 1, with Report of the Geological Survey Board and Report of the Director. Pp. iv+92+2 plates. (London: H.M. Stationery Office.) 2s. net.

British Empire Cancer Campaign. Eighth Annual Report of the Grand Council, presented at the Meeting held at the House of Lords, 20.7.31. Edited by J. P. Lockhart-Mumery. Pp. 202. (London.)

## FOREIGN.

Bulletin of the National Research Council. No. 80: Physics of the Earth. 4: The Age of the Earth. Pp. v+487. (Washington, D.C.: National Academy of Sciences.) 4.50 dollars.

Japanese Journal of Geology and Geography. Transactions and Abstracts, Vol. 8, No. 4, March. Pp. ii+239-359+29-38. (Tokyo: National Research Council of Japan.)

Bulletin of the Earthquake Research Institute, Tokyo Imperial University. Vol. 9, Part 2, June. Pp. 115-223. (Tokyo: Iwanami Shoten.) 1.08 yen.

Classified List of Smithsonian Publications available for Distribution, May 22, 1931. Compiled by Helen Munroe. (Publication 3119.) Pp. vi+30. (Washington, D.C.: Smithsonian Institution.)

Journal of the Faculty of Agriculture, Hokkaido Imperial University. Vol. 29, Part 4: The Primary Survey of the Vegetation of the Middle Kuriles. By Misao Tatewaki. Pp. 127-190+10 plates. (Tokyo: Maruzen Co., Ltd.)

Bulletin of the Utsunomiya Agricultural College. No. 1, April. Pp. 60. (Utsunomiya.)

Publications de l'Observatoire de Genève. Rapport sur les concours de réglage de chronomètres de l'année 1930. Pp. 30. (Genève.)

Proceedings of the Imperial Academy. Vol. 7, No. 5, May. Pp. xi-xvi+179-210. (Tokyo.)

The Structure and Procedure of Cadastral Survey in Palestine. By Major C. H. Ley. Pp. ii+37+8 plates. (Jerusalem: Printing and Stationery Office.) 150 mls.

New York Zoological Society. Report of the Director of the Aquarium. Pp. 27. (New York City.)

Instituts scientifiques de Buitenzorg: "s Lands Plantentuin". Treubia: recueil de travaux zoologiques, hydrobiologiques et océanographiques. Vol. 12, Supplement: Orthoptera Celebica Sarasiniana. I: Saltatoria. Von L. Chopard, H. H. Karny und C. Willemse. Pp. 273. (Buitenzorg: Archipel Drukkerij.)

Proceedings of the American Academy of Arts and Sciences. Vol. 66, No. 8: Researches on the Rotation of Permalloy and Soft Iron by Magnetization and the Nature of the Elementary Magnet. By S. J. Barnett. Pp. 273-348. 1.20 dollars. Vol. 66, No. 9: Note on the Kelvin Scale Temperature of Freezing Water. By Fredrick G. Keyes. Pp. 349-355. 35 cents. (Boston, Mass.)

National Research Council. Transactions of the American Geophysical Union, Twelfth Annual Meeting, April 30 and May 1, 1931, Washington, D.C. Pp. 229. (Washington, D.C.: National Academy of Sciences.)

Occasional Papers of the California Academy of Sciences. 18: The Avifauna of the Galapagos Islands. By Harry S. Swarth. Pp. 299. (San Francisco.) 3 dollars.

Paleontologia Sinica. Series D, Vol. 7, Fascicle 2: On an Adolescent Skull of *Sinanthropus pekinensis* in Comparison with an Adult Skull of the same Species and with other Hominid Skulls, Recent and Fossil. By Dr. Davidson Black. Pp. iv+144+16 plates. (Peking: Geological Survey of China.)

Japanese Journal of Mathematics. Transactions and Abstracts, Vol. 8, No. 1, June. Pp. 64. (Tokyo: National Research Council of Japan.)

The Science Reports of the Tohoku Imperial University, Sendai, Japan. Fourth Series (Biology), Vol. 6, No. 2. Pp. 163-846+plates 4-11. (Tokyo and Sendai: Maruzen Co., Ltd.)

Proceedings of the United States National Museum. Vol. 59, Art. 3: A New Species of Nematode Worm from the Sage Grouse. By Everett E. Wehr. (No. 2869.) Pp. 3. Vol. 79, Art. 5: Description of a New Genus and Species of Nematode Worm occurring in the Northwestern Belted Kingfisher, with a Key to the Genera of the Subfamily Acuariinae. By Everett E. Wehr. (No. 2871.) Pp. 4. (Washington, D.C.: Government Printing Office.)