Science News a Century Ago

Work of the Cambridge Observatory

According to the *London and Edinburgh Philosophical Magazine*, at a meeting of the Cambridge Philosophical Society held on May 4, 1835, "Prof. Airy gave an account of recent results obtained at the Observatory; namely, 1st, That the discrepancy of the observations of the obliquity of the Ecliptic at the summer and winter solstices formerly noticed, had disappeared on using the refraction corresponding to a new barometer which stands 1-10th of an inch higher than one formerly used. 2nd, That the mass of Jupiter, as determined by observations of the 4th Satellite in 1834, is almost exactly the same as that obtained in 1832 and 1833, namely 1–1048th of the Sun's mass. 3rdly, That the time of rotation of Jupiter, as determined by a spot, is 9h, 55m, 21s: the spot from which the determination was obtained made 225 revolutions in 93 days."

Marine Meteorology at the Royal Society

At a meeting of the Royal Society held on May 7, 1835, at which Sir John Rennie presided, five papers were read, including three on marine meteorology, communicated by Capt. Beaufort, R.N. They were entitled "Hygrometrical Observations made on board His Majesty's surveying vessel Ætna", "Meteorological Register from the 1st of January to the 1st of November 1834" and "Meteorological Register kept on board His Majesty's Ship Thunder, between the 1st of January and the 30th of June 1834". This last 'register' had been kept by R. Owen, Commander, while the other, from January 1 until November 1, 1834, had been kept by Edward Barnett and contained observations made during a voyage across the Atlantic.

Cooking by Gas

On May 7, 1835, a correspondent, "M. P.", writing from Hitchin to the editor of the *Mechanics' Magazine*, began his letter: "If any of your long list of readers are smitten with the desire of diffusing useful knowledge, and are in possession of the information I seek, they will thank me for affording them an opportunity of indulging that laudable and fashionable propensity." A gas works had just been erected in Hitchin, and attempts were being made to use the gas for cooking. "M. P." said they had tried an apparatus described in the fifteenth volume of the *Mechanics' Magazine*. "It consists," he said, "of nothing more than a cylinder of thin sheet iron, twelve inches high, six inches wide at the bottom and three at the top. The bottom is open and the top is covered with a piece of thin wire gauze." The gas pipe being carried up two inches into the cylinder, the gas jets mixed with the common air and ascended together through the gauze and were set fire to at the top. Results of experiments, "M. P." said, showed that two quarts of water could be boiled by the application of three feet of gas, and as the price of gas was 12*s*. 6*d*. per thousand feet the expense was only a halfpenny. He was, however, desirous of having further information on the subject.

Wheatstone on Speaking Machines

At the Royal Institution on May 8, 1835, Wheatstone delivered a lecture on speaking machines. Mr. Wheatstone, said the *Record of General Science*, gave an account of the different attempts which had been made to invent speaking machines from the time when the oracular responses were delivered at Delphi, through the period when a speaking head was exhibited by the Pope towards the end of the tenth century, and others afterwards by Roger Bacon and Albertus Magnus, with the impositions which were practised upon the credulous, to the present time when the principle of a speaking machine had been developed by Mr. Willis. Van Helmont was one of the first to write upon the adaptation of the organs of voice to the articulation of the letters. He considered that the letters of the alphabet constituted the order in which articulate sounds were naturally produced, by the structure of the tongue and the larynx; that when one letter is uttered the tongue is in the proper position for the pronunciation of the subsequent one. Wheatstone gave a demonstration with a copy of a speaking machine which had been invented in Germany, the words 'mamma', 'papa', 'mother', 'father' and 'summer' being distinctly pronounced. The instrument consisted of a pair of bellows, to which a tube was fixed and which ended in a bell, the aperture of which was regulated by the hand so as to produce the sounds.

Societies and Academies

DUBLIN

Royal Irish Academy, March 16. W. B. MORTON: Vortex polygons. A revision and completion of the classical investigation of J. J. Thomson on the stability of the rotation of a set of equal straight vortex-filaments at the angular point of a regular polygon. It is found that the period of rotation is that also of the most rapid oscillations about steady motion, the shorter periods given in the former work for five and six vortices being spurious, and arising from an unjustifiable step in the analysis. The motion of seven vortices is on the border line between stability and instability, one of the oscillations having vanishing frequency, to the first order of approximation. The modes of motion in each case are examined in detail.

PARIS

Academy of Sciences, March 18 (*C.R.*, **200**, 993–1076) GEORGES CLAUDE: The campaign of the *Tunisie*. AUGUSTE LUMIÈRE and MLLE. SUZANNE SONNERY: The mode of action of suspensions of carbon introduced into the circulation. Intravenous injections of carbon induce hyperleucocytosis, roughly doubling the proportion of white corpuscles. SAMUEL EILENBERG: Invariance with respect to small transformations. CLAUDE CHEVALLEY: The definition of Betti groups of closed ensembles. GEORGES VALIRON: The Borel directions of meromorph functions of zero order. M. LAVRENTIEFF: A class of continued representations. CHARLES LEDOUX: A stroboscopic torsiometer for the determination of the power of a motopropulsive group of a ship. PIERRE SALET: The velocity of light deduced from measurements of stellar radial velocities. The difference between the velocity of light deduced by the spectroscopic method from stellar radial velocities and that of Michelson is not due to a systematic error depending on the hour angle in the star observations. ANDRÉ GOUGENHEIM: The accuracy obtained in determinations of latitude by means of the prism astrolabe.

LOISEAU : The rational mechanics of the Euclidian connexions and a necessary form of all physical laws. PIERRE JOLIBOIS : A new arrangement of the diffusion pump. Description, with diagram, of a combined Sprengel pump and mercury vapour pump. PIERRE AUGER, ALBERT ROSENBERG and FRANÇOIS BERTEIN : The characters of two corpuscular components of the cosmic radiation. Experiments confirming the view given in an earlier paper, that there are two groups of primary corpuscular cosmic rays, both of great energy, but absorbed differently by matter. MARCUS FRANCIS and TCHENG-DA-TCHANG : The preparation of thin layers of uranium oxide, U_3O_8, by electrolysis. Deposits of less than 0·2 mgm. per square cm. are adherent, even after ignition. LÉONARD SOSNOWSKI : The artificial radioactivity of bismuth. The excited radioactivity was very weak, but its variation of intensity followed an exponential law. The capture of a neutron by the bismuth nucleus is accompanied neither by emission of a proton nor by the emission of an α-particle. MAURICE DE BROGLIE : Remarks on the preceding communication. JEAN PERREU : The tonometry of saline solutions. VICTOR HENRI and PIERRE ANGENOT : The ultra-violet absorption spectrum of pyridine. Three frequencies, 600 cm.$^{-1}$, 1,029 cm.$^{-1}$ and 1,488 cm.$^{-1}$ are found in Raman, infra-red and ultra-violet spectra. MLLE. CÉCILE STORA : Contribution to the physico-chemical study of photosensitive electrodes with colouring matters. JEAN J. TRILLAT and M. PAIĆ : The annealing of pure aluminium. The results of an X-ray study of commercial (99 per cent) and refined (99·993 per cent) aluminium. PAUL LAFFITTE and PIERRE GRANDADAM : The nitride formation of some metals. The production of nitride was studied by measuring the changes in electrical resistance of a wire heated in nitrogen or in ammonia. M. LEMARCHANDS and MLLE. D. SAUNIER : The reaction of the metalloids on the basic oxides. Study of the substance obtained by grinding iodine with mercuric oxide in a mortar : its constitution is $HgOI_2$. PAUL JOB, MME. MARIE FREYMANN and RENÉ FREYMANN : Absorption spectra in the near infra-red of organic and mineral derivatives of ammonia. ARMAND MARIE DE FICQUELMONT : The action of ammonia on the tetramer of phosphorus bichloronitride. The final product is always phosphorus nitride, P_3N_5. P. P. BOUDNIKOFF : The heat of hydration of mortars. JACQUES PARROD : The oxidation products of (*d*-arabino) tetrahydroxybutyl.4.imidazol by nitric acid. LÉON PALFRAY : Some new mineral salts of urea. ROBERT LEVAILLANT : The action of methyl chlorsulphonate on methyl acetate : the action of dimethyl sulphate on acetyl chloride. MLLE. SIMONNE CAILLÈRE : The signification of the phenomenon of incandescence shown by certain antigorites. VALÉRIEN AGAFONOFF : Some considerations on the colloidal part of French soils. MARCEL PICHOT : The imbibition and swelling of the clay of arable soil and their relations with the solids in rivers. DANIEL BARBIER, DANIEL CHALONGE and ETIENNE VASSY : The effect of the temperature of the stratosphere on the spectrum of ozone. CHARLES FABRY : Remarks on the preceding paper. ST. JONESCO : Pollination in certain ephemeral flowers. RENÉ LERICHE and RENÉ FONTAINE : Demonstration by aortography at the thorotrast of the vasodilating effect of peri-arterial sympathectomy. Analysis of this effect. MLLE. JEANNE LÉVY : Experimental alcoholism. Cellular hypersensibility due to acidosis. JAMES BASSET, EUGÈNE WOLLMAN, MME. ELISABETH WOLLMAN and MICHEL A. MACHEBOEUF : Studies on the biological effects of ultrapressures. The action of very high pressures on the bacteriophages of spores and on autolysins. MICHEL WEINBERG and JEAN DAVESNE : The antitoxic titre and anti-infectious power of therapeutic sera.

LENINGRAD

Academy of Sciences (*C.R.*, 1, No. 1 ; 1935). M. LAVRENTJEV : Some properties of univalent functions. O. ZHITOMIRSKIJ : Classification of cubic forms. A. IVANOV : Perturbations in the movement of the minor planet (122) Gerda during the period 1904–35, and the ephemeris of the planet for the opposition in 1935. B. NUMEROV : The problem of the determination of the geoid on the basis of gravity observations. S. RODIONOV, M. PAVLOVA, N. REJNOV, N. STUPNIKOV and A. JUZEFOVICH : The short ultraviolet in the solar spectrum. N. ANDREJEV : Measurement of the amplitude of vibration by a finger. O. LEIPUNSKIJ : The steric factor in the equation of the rate of activated adsorption. E. BRUMBERG : A new sensitive polariscope. V. DUBOV : Local tides of the Baltic Sea and their connexion with inundation at Leningrad. F. LOEWINSON-LESSING : Two kinds of correlation between the atomic numbers and atomic weights of chemical elements. J. KERKIS : Does the irradiation of the soma produce mutations in the germ cells ? M. TIMOFEJEVA : Frost resistance of winter cereals in connexion with the phasic development and hardening of plants. N. PETINOV : Methods of controlling the grain quality of irrigated wheats. While watering by flooding reduces the protein content of grain, spraying increases both the amount of grain and its protein content. E. SLASTENKO : The *Scorpaena* of the Black Sea.

VIENNA

Academy of Sciences, Feb. 28. MARGARETE HOFFER : Determination of the polonium content from salts of thick layers. HERBERT HABERLANDT, BERTA KARLIK and KARL PRZIBRAM : Fluorescence of fluorite (4). Detection of uranium in fluorites and low-temperature fluorescence. After intense ignition, fluorites show a green uranium band, which serves in estimating the uranium content. The nearer the fluorite is to acid eruptive rock, the more frequent and the more dominant is the yellowish-green fluorescence of the ytterbium. Varying relative concentrations of ytterbium and europium in fluorites from different sources are indicated. R. BRINCKMANN : Comparative researches in the Gosau Basin of the north-eastern Alps. ADOLF MÜLLER and MAURICE DORFMAN : Photochemical behaviour of pyridine, 2-benzylpyridine, papaverine and various derivatives. When irradiated with a quartz lamp in the air, 2-benzylpyridine undergoes two main reactions. In the short-wave ultra-violet, a yellow aldehydic compound is formed, the pyridine ring probably being ruptured. In the long-wave ultra-violet, photo-oxidation to 2-benzoylpyridine and 1 : 2-di-α-pyridyl-1 : 2-diphenylethane occurs ; papaveraldine is formed similarly from papaverine. F. HESS : Reply to Arthur Wagner's "Critical Remarks on the Daily Course of Cosmic Ultra-radiation". The reality of the daily course of ultra-violet radiation indicated earlier by Hess, Steinmaurer and Graziadei is confirmed. JOSEF A. PRIEBSCH : Statistical determination of the effect of barometric pressure on ultra-radiation. By a modification in the method of calculating, errors

involved in the statistical method of ascertaining the air-pressure coefficient of ultra-radiation are taken into account. ARMIN DADIEU and HANS KOPPER: The Raman spectrum of liquid deuterium chloride. This spectrum consists of a wide, diffuse band of low intensity and with a maximum at 2041 cm.$^{-1}$. Under analogous conditions, ordinary liquid hydrogen chloride furnishes a band at 2822 cm.$^{-1}$. GUIDO MACHEK: The action of aromatic hydroxy-sulphonic acids on hippuric acid (1). The interaction of hippuric acid and the three isomeric cresols, phenol and β-naphthol yields salt-like molecular compounds of the hydroxybenzene (or naphthol) with glycocoll (liberated from the hippuric acid) in equimolecular proportions. LEOPOLD SCHMID and CHARLOTTE KEMENY: Investigation on *Flores verbasci*. The identity of the acid found, together with the colouring matter crocetin, in these flowers with *n*-1 : 14-tetradecandicarboxylic acid is confirmed by the synthesis of the acid from sebacic acid, by way of decandiol. HANS PRZIBRAM: The life of the water-beetle, *Hydrocus piceus*, L. (Col. Hydroph.), without antennæ. The feelers are not unconditionally necessary to the breathing of *Hydrocus* in water.

Forthcoming Events

[*Meetings marked with an asterisk are open to the public.*]

Sunday, May 5

BRITISH MUSEUM (NATURAL HISTORY), at 3 and 4.30.—M. A. Phillips: "Birds".*

Tuesday, May 7

UNIVERSITY COLLEGE, LONDON, at 5.—Dr. E. W. Fish: "The Physiology of the Teeth" (succeeding lecture on May 14).*

INSTITUTION OF CIVIL ENGINEERS, at 6.—Prof. O. T. Jones: "Geophysics" (James Forrest Lecture).

Wednesday, May 8

INSTITUTE OF METALS, at 8.—(at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1).—Prof. W. L. Bragg: "Atomic Arrangements in Metals and Alloys" (Annual May Lecture).

Thursday, May 9

ST. MARY'S HOSPITAL, LONDON, at 5.—Prof. E. D. Adrian: "The Electrical Activity of the Brain".*

KING'S COLLEGE, LONDON, at 5.30.—Hugh Braun: "The Development of the Castle in England and Wales" (succeeding lectures on May 16, 23 and 30).*

Friday, May 10

ROYAL INSTITUTION, at 9.—Dr. C. S. Myers: "The Scientific Approach to Vocational Guidance".

ELECTRICAL ASSOCIATION FOR WOMEN, May 8–11.—Annual Conference to be held in Manchester and Salford.

Margaret, Lady Moir: President.

Official Publications Received

GREAT BRITAIN AND IRELAND

Reports of the Council and Auditors of the Zoological Society of London for the Year 1934, prepared for the Annual General Meeting to be held on Monday, April 29th, 1935. Pp. 103. (London: Zoological Society.)

The Scientific Proceedings of the Royal Dublin Society. Vol. 21 (N.S.), No. 22: Investigations on the Control of Seedling Diseases of Sugar Beet. By William Hughes. Pp. 205–212. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 6*d*.

Bristol Museum and Art Gallery. Publication 19: Explanatory Guide to the Geological Relief Map of the Bristol District. By Prof. S. H. Reynolds. Second edition. Pp. 24. (Bristol: Bristol Museum and Art Gallery.) 3*d*.

Imperial Agricultural Bureaux. Fifth Annual Report of the Executive Council, 1933–1934. Pp. 51. (London: H.M. Stationery Office.) 4*s*. net.

Agricultural Progress: the Journal of the Agricultural Education Association. Vol. 12, 1935. Pp. 204. (Cambridge: W. Heffer and Sons, Ltd.) 5*s*. net.

Brussels Exhibition 1935: British Chemical Exhibit. Organised by the Association of British Chemical Manufacturers. Pp. 87. (London: Association of British Chemical Manufacturers.)

OTHER COUNTRIES

U.S. Department of Agriculture. Circular No. 334: Characters Useful in distinguishing Larvæ of *Popillia japonica* and other introduced Scarabæidæ from Native Species. By Robert J. Sim. Pp. 20. (Washington, D.C.: Government Printing Office.) 5 cents.

Comptes rendus de la septième séance de la Commission Géodésique Baltique réunie à Léningrad et Moscou du 12 au 19 Septembre 1934. 1e partie: Procès-verbaux et rapports. Redigés par Ilmari Bonsdorff. Pp. iii+182. 2e partie: Communications. Redigés par Ilmari Bonsdorff. Pp. ii+429. (Helsinki: Commission Géodésique Baltique.)

Obras completas y Correspondencia cientifica de Florentino Ameghino. Vol. 14: Investigaciones de morfologia filogenética en los molares superiores de los Ungulados. Edicón Oficial ordenada por el Gobierno de la Provincia de Buenos Aires. Dirigida por Alfredo J. Torcelli. Pp. 619+271 plates. (La Plata.)

Carnegie Endowment for International Peace. Annual Report for 1934 of the Division of Intercourse and Education. By Nicholas Murray Butler. Pp. 68+8 plates. (Washington, D.C., and New York: Carnegie Endowment for International Peace.)

Field Museum of Natural History. Report Series, Vol. 10, No. 2: Annual Report of the Director to the Board of Trustees for the Year 1934. (Publication 336.) Pp. 137–280+plates 13–24. (Chicago: Field Museum of Natural History.) 1 dollar.

New York Academy of Sciences. Scientific Survey of Porto Rico and the Virgin Islands. Vol. 14, Part 2: Insects of Porto Rico and the Virgin Islands—Homoptera (excepting the Sternorhynchi). By Herbert Osborn. Pp. 111–260. (New York City: New York Academy of Sciences.) 2 dollars.

Imperial College of Tropical Agriculture: Low Temperature Research Station. Memoir No. 1: The Storage of Avocado Pears. By C. W. Wardlaw and E. R. Leonard. Pp. 20. (Trinidad: Imperial College of Tropical Agriculture.) 2*s*. net.

Bulletin of the American Museum of Natural History. Vol. 68, Art. 4: Wallace's Line and the Distribution of Anglo-Australian Mammals. By Henry C. Raven. Pp. ii+179–293. (New York: American Museum of Natural History.)

South Australia: Department of Mines. Mining Review for the Half-Year ended June 30th, 1934. (No. 60.) Pp. 72+2 plates. (Adelaide: Government Printer.)

Journal of the Faculty of Agriculture, Hokkaido Imperial University. Vol. 36, Part 2: Mycological and Pathological Studies on the Downy Mildew of Italian Millet. By Makoto Hiura. Pp. 121–284+plates 9–14. (Tokyo: Maruzen Co., Ltd.)

Bernice P. Bishop Museum. Occasional Papers. Vol. 10, No. 18: New Nemerteans from Hawaii. By W. R. Coe. Pp. 9. Vol. 10, No. 19: Taxonomic Studies of Raiatean Plants. By John William Moore. Pp. 8. Vol. 10, No. 20: Anatomy of Hawaiian Peperomias. By T. G. Tuncker and William D. Gray. Pp. 19. Vol. 10, No. 21: Revised List of Hawaiian Ants. By William Morton Wheeler. Pp. 21. Vol. 10, No. 22: Check List of the False Scorpions of Oceania. By J. C. Chamberlin. Pp. 14. Vol. 10, No. 23: Indo-Pacific Terrestrial Talitridae. By K. Stephensen. Pp. 20. Vol. 10, No. 24: New and Rare Polynesian Crustacea. By Charles Howard Edmondson. Pp. 40. (Honolulu: Bernice P. Bishop Museum.)

Memoirs of the Bernice P. Bishop Museum. Vol. 11, No. 6: The Fishes of Oceania, Supplement 2. By Henry W. Fowler. Pp. 385–466. (Honolulu: Bernice P. Bishop Museum.)

Bernice P. Bishop Museum. Bulletin 113: Society Islands Insects. (Pacific Entomological Survey, Publication 6.) Pp. 156. Bulletin 114: Marquesan Insects, 2. (Pacific Entomological Survey, Publication 7.) Pp. ii+378. Bulletin 123: Archæology of the Pacific Equatorial Islands. By Kenneth P. Emory. (Whippoorwill Expedition, Publication No. 4.) Pp. 43+5 plates. Bulletin 125: Hawaiian Helicinidae. By Marie C. Neal. Pp. 102. Bulletin 126: Outline of Hawaiian Physical Therapeutics. By E. S. Craighill Handy, Mary Kawena Pukui and Katherine Livermore. Pp. 51. Bulletin 127: The Legends of Maui and Tahaki. Translated by J. F. Stimson. Pp. 100. Bulletin 128: Flowering Plants of Samoa. By Erling Christophersen. Pp. iii+221. Bulletin 129: Polychaeta from Hawaii. By Maximilian Holly. Pp. 33. (Honolulu: Bernice P. Bishop Museum).

CATALOGUES

Foyles Catalogue of Books on Folklore, Comparative Religion, Mythology (New and Secondhand). Pp. 12. (London: W. and G. Foyle, Ltd.)

Books, Periodicals and Pamphlets on Geology, including Palaeontology, Mineralogy and Mining. (New Series, No. 40.) Pp. 44. (London: Wheldon and Wesley, Ltd.)

Electrical Measuring Instruments. (Special List No. 5.) Pp. 32. Polarograph. Pp. 2. (Köln: E. Leybold's Nachfolger A.-G.; London: W. Edwards and Co.)

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