Societies and Academies

DUBLIN

Royal Irish Academy, June 25. SEÁN P. O. RIORDÁIN: Recent acquisitions from Co. Donegal in the National Museum. The paper deals with more than one hundred acquisitions obtained from Co. Donegal by the National Museum of Ireland during a period of about five years. Many of the Donegal finds were shown to be of unusual types in Irish archæology and gave evidence of interesting connexions with other lands, the relationships with Scotland being particularly close. Several new burial-finds were described, and in a resume of bronze age burials a total of eight hitherto unpublished finds of food-vessels was brought to notice. Other discoveries of outstanding interest were a find of 108 amber beads (some with double perforation for use as 'spacers'); a socketed bronze axe with an arrangement of circle and pellet ornament similar to Scottish examples; an unusual type of flat bronze dagger, and a remarkable large stone axe. From the later period a find of three silver bracelets of Norse workmanship was dealt with in connexion with similar finds from Great Britain and the Continent and with regard to the evidence of ancient silver mining in Ireland. JOSEPH ALGAR and K. J. HANWAY: Further studies in the synthesis of diflavones. β-Diketones derived from diacetoresorcinol-dimethyl ether may be prepared by condensing the latter substance with aromatic aldehydes in the presence of alcoholic sodium hydroxide to form dichalkones, such as dibenzylidene-diacetoresorcinol dimethyl ether. These dichalkones, by addition of bromine, form tetrabromides and the latter, when heated with methyl alcoholic sodium methylate followed by treatment with hot aqueous hydrochloric acid, are converted into β-diketones of the type dibenzoylaceto-resorcinol dimethyl ether. While the procedure described affords a convenient route for the synthesis of β-diketones from diacetoresorcinol dimethyl ether, attempts to prepare diflavones from the diketones by the action of hot concentrated hydriodic acid, were not uniformly successful. In some cases the analytical results appeared to indicate that ring closure had occurred on one side only of the central nucleus and that the action of the hydriodic acid had resulted in ketonic hydrolysis of the second diketone grouping with the production of a monoflavone of the type 4′·7 dihydroxy-6-acetyl-flavone.

PARIS

Academy of Sciences, June 25 (*C.R.*, **198**, 2217–2312). V. GRIGNARD: The method *par entraînement* for the preparation of mixed organomagnesium compounds. Experimental evidence is given proving that the functional exchange discovered by Prevost and studied more recently by Urion is quite insufficient to explain the phenomenon recently described by the author and named by him the method *par entraînement*. PAUL LANGEVIN was elected a member of the Section of Physics in succession to the late P. Villard. J. GERONIMUS: Some extremal properties of trigonometric polynomials. M. LEVY: Selective transformations. Application to the analysis of mixtures of sinusoids. CAÏUS JACOB: Some generalised problems of Dirichlet-Neumann for multiply connected areas. RENATO CACCIOPPOLI: Double integrals of Cauchy, and generalised monogenic functions. PIERRE VERNOTTE: The control of the regularity of graduation of a thermometer. The method is based on the determination of the rate of cooling of a calorimeter vessel surrounded by a water jacket of constant temperature. MARCEL SCHWOB: The dispersion and thermal variation of the electrical double refraction of some optically active liquids. Ethyl and butyl tartrate were examined. These liquids have zones of abnormally rapid variation of the electric double refraction with temperature. In the case of ethyl tartrate, Langevin's law does not appear to be obeyed between 4° C. and 15° C. HENRY DE LASZLO: The determination of the structure of the free molecules of tetrabromo- and tetraiodo-pentaerythrite by the diffraction of electrons. L. ABONNENC: The diamagnetism of the ions. B. DECAUX and J. B. GALLÉ: Fluctuations in the time of propagation of short radio-electric waves. In the experimental arrangement described any variation in time over the journey Paris to Algiers and back was shown by a variation of the Lissajous figure on the screen of an oscillograph. During the day this figure remained stable, but at night the Lissajous figures continually changed in shape, sometimes so rapidly that it was impossible to follow them. The variations indicated a difference of time of more than 0·001 sec. over a total time for the double journey of 0·01 sec. ANGLA: Citronnellol-rhodinol. JEAN JAFFRAY: The origin of the high-frequency oscillations produced by high-tension magnetos. W. SWIETOSLAWSKI: The degree of dehydration of binary azeotropes. This can be measured by determining the difference between the temperatures of boiling and condensation. Quantities of water not exceeding 10^{-5} gm. per gm. of mixture can be detected in this way. AUGUSTIN BOUTARIC: The mechanism of the ascent of colloidal solutions in porous bodies. GUY GIRE and ALFRED MOTAIS DE NARBONNE: The action of magnesium on solutions of nickel chloride. E. VELLINGER and G. MULLER: The oxidation of mineral oils by atmospheric oxygen at moderate temperatures. The quantity of asphaltic products formed from mineral oils during the heating in presence of copper is proportional to the time of heating and to the quantity of copper dissolved in the oil. MLLE. BLANCHE GREDY: The study of some acetylene ether oxides. Study of Raman spectra of compounds of the type $R.C \equiv C.CH_2OCH_3$. MARCEL SOMMELET and ISRAËL MARSZAK: Chlormethyl compounds derived from the phenols. OCTAVE BAILLY and JACQUES GAUMÉ: The migration of the phosphoric radical in the course of the hydrolysis of the α-methylglycerophosphoric diester. The passage from α- to β-glycerophosphates. CH. COURTOT: Study in the diphenylene sulphide series. WIEMANN: The hydrogenation of a mixture of two α-ethylenic aldehydes. CHARLES PRÉVOST and RENÉ LUTZ: The reaction of the iodo-argento-benzoic complex on the erythrenic hydrocarbons. V. AGAFONOFF: The question of the buried soils of Alsace. J. JUNG: The position of the rhyolitic tufas of the Sioule (Puy-de-Dôme) valley and the ante-Hercynian age of the gneiss and granites of the north-west part of the Central Plateau. L. CLARIOND: The Palæozoic series of the territories of Tafilalelt (Morocco). CH. POISSON: The evolution of tropical tempests. Discussion of the laws governing tropical storms and the possibility of their prediction. CH. CHABROLIN: The germination of the seeds of *Orobanche*. J. GIAJA and S. GELINEO: Nutrition and resistance to cold. MLLE. A. ARVANITAKI and H.

CARDOT: The interpretation on a common base of myocardic electrograms. ET. RABAUD and MLLE. M. L. VERRIER: Retinal excitability and reflex immobilisation in birds. W. KOPACZEWSKI: Lacto-gelification of the seric proteins. MLLE. A. MICHAUX: The proportions of calcium and magnesium in the brain of guinea-pigs either normal or attacked with acute scurvy and chronic scurvy. G. DELAMARE: Numerical values of some primary sinusoids with unequal loops of the body of the Spirochetideæ. HENRI B. REITLINGER: A phenomenon of super-saturation of warm water.

LENINGRAD

Academy of Sciences (*C.R.*, n.s., **2**, No. 1). A. GELFOND: On the seventh problem of D. Hilbert. B. DELONE: Fermat's theorem for $n = 3$. A. I. POPOV: On some definite integrals with cylindrical functions. V. D. KUZNETSOV and V. A. ZOLOTOV: On the mechanical formation of twins during re-crystallisation of deformed zinc single crystals. V. M. CHULANOVSKIJ and M. P. MOKHNATKIN: Fine structure of the triplet $(2s^2)\ (2p)\ 3s^3\ \varphi \rightarrow (2s^2)\ (2p^2)^3\ \varphi$ of the carbon atom. M. M. KATZNELSON and M. S. KONDAKOVA: 1-Ethyl-2-methyl-valerian acid. Description of properties of the acid. A. KHARIT and N. KHAUSTOV: Oxidation and reduction processes in a working muscle (3). Glutathione in a working muscle. During work, a muscle retains the glutathione which becomes reduced, while it is dispersed by a resting muscle. The oxidised glutathione is carried away by blood both from a working and from a resting muscle. E. HASRATIAN: The influence of an unconditioned food reflex upon the corresponding conditioned reflexes. The unconditioned reflex exerts an inhibitory influence upon conditioned reflexes during a certain period after it has ceased to act; this inhibition is apparently of the nature of induction. A. SEREBROVSKIJ: The properties of Mendelian equations. Since the equations widely used in genetical literature have no algebraical meaning, the author suggests a new scheme for expressing genetic processes by formulæ constructed according to algebraic rules. The equations formed in this way may be solved algebraically, which would assist materially in the solution of various genetical problems. N. POTAPOV and N. STANKOV: Periodicity of mineral nutrition within the twenty-four hours. The rate of absorption of nitrates by Indian corn is determined by the intensity of the internal processes in the root system, particularly by the breathing activity of the root cells. During the night, the energy of breathing and the absorption of mineral substances increases, by day it decreases. N. UDOLSKAJA: Contribution to the study of the elements of mineral nutrition as factors altering the drought resistance of plants. The action of phosphorus on plants consists largely in increasing the water-retaining capacity of the plasma, thus ensuring a normal course of assimilation under conditions of deficient moisture. G. MOLOTKOVSKIJ: A gelatin chamber for a porometer. G. NADSON and E. STERN: The action of ultra-violet rays of a quartz mercury lamp on the cell of *Bacillus mycoides*, Fl. The rate of development is increased, and a rapid ageing of the cells results. P. MURZAJEV: Mineralogical and geochemical prognoses. The basis of a prognosis concerning the industrial value of a mineral deposit is formed by studying the type of the deposit, the paragenesis of the mineral concerned, and the chief temperature moment in the formation of the mineral body. N. A. GLADKOV: The distribution of ornithological stations on a lake in the plains. The following four stations should be distinguished: water area; waterside shallows; shore waterside thickets; and shore itself.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, **20**, 145–219, March 15, 1934). A. J. WATERMAN: Survival of young rabbit embryos on artificial media. A limited amount of growth and differentiation of embryos of the late primitive streak and two somite stages was obtained by incubation on two culture media, one containing nutrient gelatin and the other Loeffler's coagulated blood serum. CHARLES E. ALLEN: A diploid female gametophyte of *Sphærocarpos*. The involucres of a specimen of *Sphærocarpos* bore an unusually large number of appendages. The spore-tetrads produced, instead of the usual two males and two females, three or even four female-producing spores. This line is diploid, with 2 X-chromosomes and 14 autosomes. CHESTER STOCK: A second Eocene primate from California. Parts of jaw bones and teeth belonging to a primate allied to *Washakius* have been found in the Upper Eocene in the Scope deposits of southern California. MORTON D. SCHWEITZER: Coincidence and interference in *Drosophila melanogaster*. C. W. METZ: The role of the 'chromosome sheath' in mitosis, and its possible relation to phenomena of mutation. Under favourable conditions, chromosomes are seen to be surrounded by a transparent and apparently gelatinous sheath. The author believes that this sheath is a characteristic structural component of all chromosomes. It is suggested that its function is to 'insulate' the chromosome proper and to prevent it from coming into direct contact with other formed bodies in the cell, including other chromosomes. Irradiation, which increases the rate of mutation, may act by modifying the sheath in such a way as to permit intimate contacts between chromosomes. D. C. COOPER: Development of the embryo sac of *Lilium Henryi*. RICHARD M. BADGER and ROBERT C. BARTON: The ultra-violet absorption spectrum of carbon suboxide gas. In a perfectly clean quartz vessel the gas keeps well especially at low temperatures. Keeping the absorption cell at room temperature, carbon suboxide shows relatively strong absorption bands between $\lambda 3200$ and $\lambda 2500$, and a continuum overlying the bands. The bands are due to transverse oscillations of the molecule and their complexity indicates several vibrational levels of nearly the same energy. RICHARD C. TOLMAN: Effect of inhomogeneity on cosmological models. A theoretical discussion of very simple models composed of dust (nebulæ) exerting negligible pressure and distributed non-uniformly but with spherical symmetry around some particular origin. The discussion may be valid in our own neighbourhood (out to, say, 10^8 light years) and over a limited range of time (say, 10^8 years) but does not necessarily apply to the universe as a whole. R. B. LINDSAY: Elastic wave analogies to the motion of electrons in force fields. HENRY BORSOOK and GEOFFREY KEIGHLEY: A theory of protein metabolism in man. Even in a state of nitrogen equilibrium, most of the protein metabolised in a day is drawn from 'stores' in the body. The specific dynamic action of protein is composed of two factors: (*a*) metabolism of the

nitrogen, a constant which is observable at temperatures below 20° C. when 'chemical' heat regulation mechanism is in operation; and (*b*) metabolism of deaminised residues, a variable factor which comes into operation above 20° C., when body temperature is governed by 'physical' heat regulating mechanisms. NORMAN C. WETZEL: On the motion of growth. (8) The connexion between growth and heat production in the amphibian *Bufo vulgaris* from fertilisation to metamorphosis. Gayda's observations (1921) on growth and heat production of this animal lead to a differential equation of growth similar to that obtained for a human being from early fœtal to adult life and for bacteria. It is claimed that this form of equation can be used quite generally to determine the relationship of growth to metabolism in any organism. EDWIN B. WILSON and JANE WORCESTER: The resolution of four tests. EDWIN B. WILSON: On resolution into generals and specifics. M. H. STONE: Boolean algebras and their application to topology. A Boolean algebra is defined by a set of postulates in terms of (logical) addition and (logical) multiplication as undefined operations. Various theorems are developed and it is shown that there is complete mathematical equivalence between the theories of Hausdorff topology and Boolean algebras. G. A. MILLER: Groups whose squares constitute cyclic subgroups. S. BOCHNER: Average distribution of arbitrary masses under group translations. G. VALIRON: Entire functions and Borel's directions. TRACY YERKES THOMAS: The reduction of degenerate quadratic differential forms.

Official Publications Received

GREAT BRITAIN AND IRELAND

The Botanical Society and Exchange Club of the British Isles. Report for 1933 (with Balance Sheet for 1933) by the Secretary, William Harrison Pearsall. Vol. 10, Part 3. Pp. 461–745. 10*s*. Report for 1933 of the Botanical Exchange Club, by the Editor and Distributor, F. Rilstone. Vol. 10, Part 4. Pp. 747–780. 4*s*. (Arbroath: T. Buncle and Co.)

City of Leicester. Science and its Applications: a Select List of Books in the Central Reference and Lending Libraries, Leicester. Pp. vi+65. (Leicester.)

Quarterly Journal of the Royal Meteorological Society. Vol. 60, No. 255: The Phenological Report, 1933. Pp. 197–250. (London: Royal Meteorological Society.) 3*s*.

Rothamsted Conferences. 17: Modern Changes in the Treatment of Light Soils; being the Report of a Conference held at Rothamsted on March 20th, 1934, under the Chairmanship of Sir E. J. Russell. With Contributions by Sir E. J. Russell, A. J. Hosier, W. Parker, A. W. Oldershaw and Dr. H. H. Mann. Pp. 34. (Harpenden: Rothamsted Experimental Station.) 2*s*.

The Hannah Dairy Research Institute. Annual Report for the Year ending 31st March 1934. Pp. 19+2 plates. (Kirkhill, Ayr.)

The National Central Library. 18th Annual Report of the Executive Committee, 1933–34. Pp. 53. (London: National Central Library.)

Board of Education. Report of the Advisory Council of the Science Museum for the Year 1933. Pp. 47+1 plate. (London: H.M. Stationery Office.) 9*d*. net.

Proceedings of the Royal Society of Edinburgh, Session 1933–1934. Vol. 54, Part 2, No. 10: Note on the Electron Configurations p^2s, p^4s. By Dr. Robert Schlapp. Pp. 109–114. 6*d*. Vol. 54, Part 2, Nos. 11, 12: Graphical Classification of Carbonaceous Minerals—The Mineral Oils; Products of the Natural Development of Coal and Oil. By Prof. Henry Briggs. Pp. 115–134. 1*s*. 9*d*. Vol. 54, Part 2, No. 13: Some Integrals, with Respect to their Degrees, of Associated Legendre Functions. By Prof. T. M. MacRobert. Pp. 135–144. 1*s*. (Edinburgh: Robert Grant and Son; London: Williams and Norgate, Ltd.)

British Scientific Instrument Research Association. Sixteenth Annual Report for the Year April 1, 1933–March 31, 1934. Pp. 20. (London.)

OTHER COUNTRIES

British Honduras. Report of the Forest Trust for the Biennial Period ending March 31st, 1933. Pp. 22. (Belize.)

Journal of the Indian Institute of Science. Vol. 17A, Part 5: Utilisation of Non-edible Seeds and Seed-Cakes, 1: Vegetable Casein from *Pongamia glabra* and its Applications. By N. Srinivasan and V. Subrahmanyan. Pp. 49–74. (Bangalore.) 12 annas.

Nyasaland Protectorate: Geological Survey Department: Colonial Development. Water Supply Investigation: Progress Report (No. 3) for the Year 1933. Pp. 28+8 plates. (Zomba: Government Printer.) 2*s*. 6*d*.

Report of the Director of the Royal Observatory, Hong Kong, for the Year 1933. Pp. 11. (Hong Kong.)

Veröffentlichungen des Preussischen Meteorologischen Instituts. Nr. 404: Die Wärmeübertragung durch Leitung und Konvektion, Verdunstung und Strahlung in Bioklimatologie und Meteorologie. Von K. Büttner. Pp. 37. (Berlin: Julius Springer.) 5 gold marks.

Canada: Department of Mines: Mines Branch. Limestones of Canada: their Occurrence and Characteristics. Part 2: Maritime Provinces. By M. F. Goudge. (No. 742.) Pp. x+186. (Ottawa: Government Printer.) 50 cents.

Commonwealth of Australia: Council for Scientific and Industrial Research. Bulletin No. 80: The Establishment, Persistency and Productivity of Selected Pasture Species on an Irrigated Reclaimed Swamp. By H. C. Trumble and Dr. J. Griffiths Davies. Pp. 32. (Melbourne: Government Printer.)

The Indian Forest Records. Vol. 20, Part 4: Entomological Investigations on the Spike Disease of Sandal, (21), Thysanoptera. By Dr. T. V. Ramakrishna Ayyar. Pp. ii+12+1 plate. (Delhi: Manager of Publications.) 6 annas; 8*d*.

Survey of India. Geodetic Report, 1933. Pp. xii+117+20 plates. (Dehra Dun.) 3 rupees; 5*s*. 3*d*.

Journal of the Faculty of Agriculture, Hokkaido Imperial University. Vol. 33, Part 3: Die japanischen Hylobiinen (Col. Curc.). By Hiromichi Kono. Pp. 223–248+plates 5–6. Vol. 33, Part 4: A Study on the Development of the Tusser Worm, *Antheræa pernyi* Guer. By Saburo Saito. Pp. 249–266+plates 7–11. (Tokyo: Maruzen Co., Ltd.)

Science Reports of the Tokyo Bunrika Daigaku, Section A. No. 30: Über die Untersuchungen der organischen Schwefelverbindungen, Mitteilung 2: Über die Wirkung von Ozon auf Thiamiden und Thianiliden. Von Seiichi Ishikawa und Yohzoh Katoh. Pp. 17–26+1 plate. 20 sen. Nos. 31–22: Über die Verteilung der Primzahlen, von Heihachiro Ishikawa; Some Remarks on the Univalency and Multivalency of Functions, by Shigeo Ozaki. Pp. 27–55. 50 sen. (Tokyo: Maruzen Co. Ltd.)

Sudan Government: Wellcome Tropical Research Laboratories, Khartoum. Report of the Government Chemist for the Year 1933. (Chemical Section, Publication No. 67.) Pp. 16. (Khartoum.)

Reports of the Cancer Research Laboratories of the University of Pennsylvania Graduate School of Medicine. Vol. 2, 1932–1933. 34 papers. (Philadelphia.)

Smithsonian Miscellaneous Collections. Vol. 92, No. 4: A New Original Version of Boscana's Historical Account of the San Juan Capistrano Indians of Southern California. By John P. Harrington. (Publication 3255.) Pp. 62+2 plates. (Washington, D.C.: Smithsonian Institution.)

U.S. Department of the Interior: Geological Survey. Circular 9: Geology and Ore Deposits of the Elk City, Orogrande, Buffalo Hump and Tenmile Districts, Idaho County, Idaho. By P. J. Shenon and J. C. Reed. Pp. v+89+1 plate. Bulletin 849–D: The Mount Eielson District, Alaska. By John C. Reed. (Investigations in Alaska Railroad Belt, 1931.) Pp. viii+231–287+plates 21–24. 25 cents. (Washington, D.C.: Government Printing Office.)

The University of Colorado Studies. Vol. 21, No. 3: A Bibliography of Indium, 1863–1933. By Herbert A. Potratz and Prof. John B. Ekeley. Pp. 151–187. (Boulder, Colo.) 1 dollar.

Publications of the Observatory of the University of Michigan. Vol. 6, No. 2: Spectrographic Studies of Eclipsing Binaries. By Dean B. McLaughlin. Pp. 3–35. Vol. 6, No. 3: Atmospheric Motion in Delta Cephei. By R. M. Petrie. Pp. 37–42. (Ann Arbor, Mich.)

Memoirs of the Commonwealth Solar Observatory, Mount Stromlo, Canberra, Australia. Memoir No. 3: Measurements of Atmospheric Ozone made at the Commonwealth Solar Observatory, Mount Stromlo, Canberra, during the Years 1929 to 1932. By A. J. Higgs. Pp. 29. (Canberra: Commonwealth Government Printer.)

The New Zealand Astronomical Society, Inc. Bulletin No. 22: In Starry Skies. Part 12: Some Present Day Problems. By A. C. Gifford. Pp. 135. (Wellington, N.Z.)

Ministry of Agriculture, Egypt: Technical and Scientific Service. Bulletin No. 127: A Record of Wheat Breeding, 1921–1931. By G. P. Morris. Mohammad Eff. El Dib and Ahmed Eff. Munir. Pp. iii+127. 15 P.T. Bulletin No. 128: Genetic Basis of Selection Procedure with Cotton Wilt Disease. By Dr. Tewfik Fahmy. Pp. iv+35. 10 P.T. Bulletin No. 130: The Selection of Wilt Immune Strains of Long Staple Cotton (Sakha 4 Gidid). By Dr. Tewfik Fahmy. Pp. vii+25+63 plates. 7 P.T. Bulletin No. 132: Fruit Growing on Sandy Soils. By Dr. Yousif Milad. Pp. 20+6 plates. 4 P.T. Bulletin No. 135: Ulcerous Dermatitis of Ruminants and its relation to Diphtheria of Man. First Paper by Prof. Dr. M. Carpano. Translated from the Italian by E. Talarewitch. Pp. 48+12 plates. 7 P.T. Bulletin No. 140: Fowl-Plague in Egypt. By Dr. Ahmad Mohammed Rachad. Pp. 22. 25 mills. (Cairo: Government Press.)

CATALOGUES

Catalogue of Chemical Apparatus, Chemicals and General Laboratory Equipment. 25th edition. Pp. xvi+856. (London: F. E. Becker and Co.)

Mercury-in-Steel Thermometers. (List No. T/30.) Pp. 48. (London: Negretti and Zambra.)

A Catalogue of Books, including Americana, Australiana, Bibles, Liturgies, etc., Bibliography and Palæography. Early Printed Books, English Literature, Fine Arts, Natural History, Oriental History and Literature, Periodicals, and a small Selection of Works on Tobacco. (No. 493.) Pp. 108. (London: Bernard Quaritch, Ltd.)

"Rotolex" Electric Decorating Kiln. Pp. 4. (London: G. W. B. Electric Furnaces, Ltd.)

Alloy Steels To-day. By Prof. D. Hanson. (Nickel, A22.) Pp. 8. (London: The Mond Nickel Co., Ltd.)

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