

## Societies and Academies

## LONDON

Royal Society, April 26. F. W. P. GOTZ, A. R. MEETHAM and G. M. B. DOBSON: Vertical distribution of ozone in the atmosphere. A method has been developed for finding the average height of the ozone in the earth's atmosphere and also the general character of its vertical distribution. This method uses spectroscopic measurements of the light of the clear blue zenith sky as the sun is rising or setting. The necessary observations have been taken in Switzerland over the space of a year and the height and vertical distribution have been calculated. The average height is found to be about 22 km. above sea-level and most of the ozone exists between the ground level and 40 km. The vertical distribution depends on the total amount of ozone present, but apparently not greatly on other factors. F. P. BOWDEN and C. P. SNOW: Physico-chemical studies of complex organic molecules (1). A method is described for the production of monochromatic light of sufficient intensity to bring about reasonably rapid photochemical changes. The irradiation can be performed on very small amounts of material, and the progress of the reaction followed spectroscopically. Selective monochromatic irradiation is applied to some of the large molecules of biological importance, notably ergosterol and calciferol, vitamin B, carotene and vitamin A. F. P. BOWDEN and S. D. D. MORRIS: Physico-chemical studies of complex organic molecules (2). The absorption spectra of some important biological molecules have been measured at liquid air temperature. The bands of  $\beta$  carotene (in ethyl alcohol) become narrower and shift to 4990 Å., 4670 Å. and 4350 Å., and a new band appears at 4060 Å. The ultra-violet band at 2700 Å. becomes sharper but is little displaced. The main band of vitamin A concentrates at 3280 Å. is shifted to 3350 Å. and new structured bands appear at 2900 Å., 2770 Å., 2580 Å., 2510 Å. and 2430 Å. The absorption spectrum of vitamin E concentrates is due to several different molecules and some progress has been made in separating these out.

## DUBLIN

Royal Dublin Society, January 23. T. N. RICHARDSON and K. C. BAILEY: The oxidation of hydrazine by potassium ferricyanide. When this reaction takes place in alkaline solution, supersaturation by nitrogen gas takes place so readily that the reaction can only be followed by the rate of evolution of gas if stirring is very efficient. Acetone retards the reaction by formation of dimethylketazine, which is not oxidised under the conditions of the reaction. ROBERT MCKAY: Injury to apple trees due to mineral oils used for the control of woolly aphid. A canker on maiden apple trees originating in a nursery in the south of Ireland was traced to the use of paraffin oil for the control of woolly aphid. Various types of injury produced by paraffin on apple trees of different ages and varieties are described, the injury being aggravated by the presence of woolly aphid. Paraffin oil or petrol should not be used alone on apple trees at any season.

## PARIS

Academy of Sciences, March 5 (*C.R.*, 198, 861-996).\* PIERRE CARRÉ and JEAN PASCHÉ: The relative

\* Continued from p. 659

mobilities of the propyl and isopropyl radicals and of their mono- and dichlor-derivatives. M. TIFFENEAU and Mlle. B. TCHOUBAR: The mechanism of formation of the cyclohexanones by the action of organo-magnesium compounds on the  $\alpha$ -chlorocyclohexanones. The indirect replacement of the halogen by alkyl. GEORGES RICHARD: A new example of an abnormal reaction of potassium cyanide on an  $\alpha$ -chloroketone. LEON ENDERLIN: Researches on the dissociable organic oxides. Two oxidation terms, reducible but not dissociable, of *bis*-paratolyl.1.1.diphenyl.3.3.rubene: the tetrahydro-*bis*-epoxy and dihydrodihydroxyl derivatives. E. BALLA: Some aryl glycols. L. ROYER: Observations concerning substances which modify the facies of crystals depositing from a solution. PAUL GAUBERT: Liquid crystals obtained by the rapid evaporation of an aqueous solution. ANATOLE ROGOZINSKI: Crystal analysis with the X-rays by a method of focalisation. A. S. MIHARA: The altered form of the feldspars in the granitic sands of the Vosges. M. E. DENAEYER: The chemico-mineralogical composition of the basic rocks, intrusive or metamorphic, of Kasai (Belgian Congo). ERHART: The existence of palæo-soils in the Quaternary deposits of the Sarre valley and on their nature. JACQUES BOURCART and GEORGES CHOUBERT: Some eruptive rocks brought by the Ouezzan Trias (Morocco). RAYMOND FURON: The geological and geographical relations of the Hindu Kush and the Pamir. PIERRE URBAIN: The separation of the various constituents of clays. Description, with diagram, of an electrical method. G. GRENET: The measurement of the terrestrial electric field and of its variations. LOUIS EMBERGER: The vegetation of the massif of Seksaoua (Western Grand Atlas). A. MAIGE: Remarks on the metabolism of the nucleus and the plastids in plant cells. Mlle. GILBERTE PALLOT: Cytological researches on the neuromuscular spindles. Mlle. L. GUYON: The phenomena which occur in solutions of collagen, at the limits of action of acids and neutral salts. RAYMOND-HAMET: The initial manifestations of sympathetic action of yohimbine. H. LAUGIER, E. TOULOUSE and D. WEINBERG: Biotypology and academic classification. L. LAFICQUE: Remarks on the preceding communication. MAURICE NICLOUX: The diffusion of alcohol in the organism and bound water. MME. YVONNE KHOUVINE: The reduction of W. C. Austin's  $\alpha$ -*D*-glucoheptulose. Mlle. O. GROOTTEN and N. BEZSSONOFF: The factors which arrest the synthesis of a bacterial pigment. B. S. LEVIN and IWO LOMINSKI: The influence of colloidal lecithine on the phenomena of microbial lysis by the bacteriophage. L. BALOZET: Concerning the immunity towards infectious anæmia of horses. PIERRE ROSENTHAL: Embryotherapy. CHARLES RICHET: Remarks on the note by P. Rosenthal relating to embryotherapy.

## LENINGRAD

Academy of Sciences (*C.R.*, No. 1, 1934). S. N. BERNSTEIN: The linear quasi-continual chains of Markov. I. M. VINOGRADOV: New applications of trigonometrical polynomes. M. ROMANOVA, A. RUBZOV and G. POKROVSKIJ: Silver-plating of mirror surfaces by means of cathode sputtering. Mirrors have been prepared in a hydrogen atmosphere of 0.004-0.005 mm. mercury pressure, with a current of 15-20 m.A., the voltage between the electrodes being 1,200-1,400. B. A. NIKITIN: A qualitative reaction for radium. If to 10 c.c. of a solution

of radium chloride heated to the boiling point, 0.3 c.c. of 50 per cent  $\text{CCl}_3\text{COOH}$  and 0.5 c.c. of 10 per cent potassium chromate are added and the mixture cooled to  $0^\circ\text{C}$ ., then a crystalline precipitate is formed. Similar solution of barium produces no precipitation after such treatment. A. BACH, Z. ERMOLIEVA and M. STEPANIAN: Fixation of atmospheric nitrogen by means of enzymes extracted from *Azotobacter*. The juice of cultures of *Azotobacter* obtained under a pressure of 300 atmospheres and filtered through Chamberlain's  $L_3$  candle, proved to be able to fix atmospheric nitrogen in the presence of a solution of glucose, or of mannite. This juice fixed ten to twenty times the quantity of nitrogen, as compared with live cultures. A. NIKOLAEV, V. VDOVENKO and P. POCHIL: Artificial dehydration of hydrated salts by means of solar energy. Having placed films of kerosene, petroleum and naphtha oil upon crystalline hydrated sodium sulphate, the authors observed its conversion, on exposure to sunlight, into dehydrated salt. This was due to the film preventing the evaporation from the salt and the consequent heating up of the latter. S. BALACHOVSKI: The problem of carotene in the organism. Burns and other wounds treated by a solution of carotene healed quickly. It appears that in wounds local avitaminosis occurs and the introduction of carotene restores the balance. J. KERKIS: Hybridisation between *Drosophila melanogaster* and *D. simulans* and the question of the causes of sterility in interspecific animal hybrids. The conditions favourable to normal development of germ cells in hybrids may sometimes occur, but further investigations are necessary to discover these conditions. M. TOHAILACHIAN: The effect of length of the day upon the chlorophyll apparatus of plants. The accumulation and the content of chlorophyll in plants growing under natural conditions increase under the influence of the length of day, as the distance from the equator decreases. O. VIALOV: The lower Palaeogene in Bukhara.

(C.R., No. 2, 1934). I. VINOGRADOV: New asymptotical expressions. V. KUPRADZE: The radiation principle of Sommerfeld. W. KRAT: On darkening at the limb in eclipsing binaries. N. ANDREIEV: The possibility of observing Brownian movement with the naked eye. Brownian movement of particles in a thin film of fat placed on the surface of a slightly oxidised metallic plate can be observed as fluctuations of light in a diffraction spectrum. G. TCHELINTSEV, I. KNUNANG and Z. BENEVOLENSKAIA: The structure and synthesis of new antimalarial substances. Analyses of 'Plasmochin' and 'Atebrin'. A. CHARIT and I. FEDOROV: The oxidation and reduction processes during muscular contraction. The authors studied the changes in the oxidation-reduction potential of Ringer's fluid passing through the isolated pulsating heart. A. STUDITSKI: The potencies of the periosteum of primary and secondary ossification according to the data obtained by the cultivation of periosteal grafts on the allantois. A. A. PROKOFJEVA: Investigations on the chromosome morphology of some fishes and amphibians. The chromosome structure of the species under investigation corresponds to the principles of structure observed in plants and gives grounds for supposing a process of karyological evolution common to both the animal and the vegetable kingdom. S. SOLDATENKOV and M. CUBLI: The effect of ethyl alcohol on the ripening of tomatoes. Positive results

have been obtained in the experiments. E. GURJANOVA: The Crustacea of the Kara Sea, and the ways in which the Atlantic fauna penetrates into the Arctic. The Atlantic species pass into the Arctic along the slope of the continental shelf, not far from the Scandinavian coast.

## ROME

Royal National Academy of the Lincei: Communications received during the vacation, 1933. U. CISOTTI: Differential deductions from the definition of reciprocal vectors (1). Q. MAJORANA: New types of compensator for metallic photo-resistance. The mercury jet compensator may be replaced by a type in which a photoelectric cell is employed. L. FANTAPPIE: Integration by quadrature of the general parabolic equation with constant coefficients. G. SCORZA DRAGONI: The multiplication of series which converge conditionally (2). MARIA CIBRARIO: Certain generalisations of the numbers and polynomials of Bernoulli and Euler. B. DE FINETTI: The laws of distribution of values in a succession of equivalent aleatory numbers. E. PICASSO: The projective-differential geometry of the surfaces of  $S_4$ . A. TERRACINI: The congruences of straight lines associable with respect to a surface. B. SEGRE: Geometric-functional determination of groups of covariant points, relative to two linear pencils of curves on an algebraic surface. G. ARRIGHI: A generalisation of the equation of continuity. A. COLACEVICH: Spectroscopic observations of the variable star RS Ophiuchi (Nova Ophiuchi n. 3). F. PIRRONE and A. CHERUBINO: Studies on the hydroxyquinolines: Iodo-derivatives of *o*-hydroxyquinoline (1).  $\alpha$ -Iodo-*o*-hydroxyquinoline and a number of its derivatives have been prepared. G. MORUZZI: Contribution to the study of cerebellar localisations by the method of transneuronic degenerations. G. AMANTEA: The antineuritic factor ( $B_1$ ) and the conception of the beri-beri quotient ( $Q_b$ ). A series of twenty points emerging from the author's investigations on beri-beri in pigeons is formulated so as to indicate the logical evolution of the idea of a beri-beri quotient. A. SALVATORI: A method for the micro-determination of bromine in blood and organs. Roman's method (1929), which consists in converting the bromine into potassium bromide by fusion with potassium hydroxide, liberating the bromine by treatment with hydrogen peroxide, treating with potassium iodide, and titrating the liberated iodine, gives unsatisfactory results. V. ZAGAMI: Food value of the seeds of *Vicia Faba*, L. The results of a large number of further tests show that these seeds form an incomplete or deficient nutriment for growing rats, the deficiency relating both to salts and to vitamins A and D. Vitamins B and E are, however, present in adequate proportions.

## MELBOURNE

Royal Society of Victoria, Nov. 16. AUDREY M. ECKERSLEY: Some sap-staining organisms of *Pinus radiata*, D. Don, in Victoria. Two forms of *Ceratostomella* were isolated from sap-stained *Pinus radiata* case stock. When compared with stand cultures of *Ceratostomella*, it was found that these forms appeared to form a link between the American species *C. pilifera* (Fr.), Winther, and the European species *C. coerulea*, Munch., which are very closely related if not identical. The two new forms in their morphological characters approximate sometimes to

one and sometimes to the other, but the varietal distinctions are not all clear-cut and it is suggested that all four forms belong to a single species which is capable of exhibiting variation to a marked degree. *Hormonema dematioides*, Lagerberg et Melin, was also isolated from sap-stained *Pinus radiata*. FREDERICK CHAPMAN: A Lower Cretaceous brittlestar from Queensland. This well-preserved brittlestar is named *Ophiacantha* (*Ophioglyphoida*) *fosteri*, sub-genus et sp. nov. It was obtained from a bore-core at Cleve, Longreach, Queensland, and is defined by the pentagonal covering plates of the disc. The new specific characters are the petaloid shape of the disc, long slender arms more than five times the diameter of the disc in length, with constricted vertebral ossicles and abundant slender, thorny spines. It occurred in the Tambo series, probably near the base. It is of great interest to note that, by the discovery of a fossil *Ophiacantha* in the Cretaceous of Longreach, this particular genus has persisted from Lower Cretaceous times to the present. It is also one of the most abundant of brittle stars living in Australian seas. Its present range is from southern Tasmania to the Philippines.

### Forthcoming Events

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

Saturday, May 5

UNIVERSITY OF CAMBRIDGE, at 5—(in the New Museums).—Sir Henry Dale: "Chemical Transmission of the Effects of Nerve Impulses" (Linacre Lecture).

UNIVERSITY OF CAMBRIDGE, at 5—(in the College Hall, Newnham College).—Dr. L. S. B. Leakey: "The Problem of the Origin of Man" (Jane Ellen Harrison Memorial Lecture).

Monday, May 7

ROYAL GEOGRAPHICAL SOCIETY, at 5.—Dr. L. S. B. Leakey: "Lake Victoria in the Pleistocene".

Tuesday, May 8

ROYAL HORTICULTURAL SOCIETY, at 3.30—(at Greycoat Street, Westminster, S.W.1).—Dr. W. F. Bewley: "Health and Disease in Plants" (Masters Memorial Lectures. Succeeding lecture on May 9).

CHADWICK PUBLIC LECTURE, at 5.30—(at the Royal Society of Tropical Medicine and Hygiene, 26 Portland Place, W.1). Dr. Jane Walker: "Village Hygiene".\*

ILLUMINATING ENGINEERING SOCIETY, at 7—(at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1). Annual General Meeting.

S. G. Hibben: "Recent Progress in Illuminating Engineering in the United States".

Wednesday, May 9

INSTITUTE OF METALS, at 8—(at the Institution of Mechanical Engineers, Storey's Gate, Westminster, S.W.1).—Prof. E. K. Rideal: "Gases and Metal Surfaces".

INSTITUTE OF METALS.—Prof. E. K. Rideal: "Gases and Metal Surfaces" (Annual May Lecture).

Thursday, May 10

UNIVERSITY OF OXFORD, at 5.30—(in the Examination Schools).—Prof. H. J. Rose: "Concerning Parallels" (Frazer Lecture).

INSTITUTION OF ELECTRICAL ENGINEERS, at 6.—Annual General Meeting.

Friday, May 11

ROYAL ASTRONOMICAL SOCIETY, at 5.—Dr. Harlow Shapley: "Some Structural Features of the Meta-galaxy" (George Darwin Lecture).

ROYAL INSTITUTION, at 9.—Dr. C. Leonard Woolley: "This Year's Work at Ur".

### Official Publications Received

#### GREAT BRITAIN AND IRELAND

Annual Reports on the Progress of Chemistry for 1933. Vol. 80. Pp. 462. (London: Chemical Society.) 10s. 6d.

Royal Institute of British Architects Report of the Slum Clearance Committee. Pp. 28. (London.)

Reports of the Council and Auditors of the Zoological Society of London for the Year 1933, prepared for the Annual General Meeting to be held on Monday, April 30th, 1934. Pp. 103. (London.)

Imperial Bureau of Plant Genetics. Bibliography of Baking Quality Tests (with particular reference to Tests for Small Samples for use by Wheat Breeders). Pp. 68. Plant Breeding in the Soviet Union: Achievements, Organization and Future Programme of the Institute of Plant Industry. Pp. 58. 3s. 6d. (Cambridge: School of Agriculture.)

The Men of the Trees. Ninth Year's Report and Review of the Tree Year 1933. Pp. 36+4 plates. (London: Hon. Secretary, 32 Warwick Road, S.W.5.) 6d.

#### OTHER COUNTRIES

Publications of the Vassar College Observatory. No. 4: Part 1, The Longitude of the Vassar College Observatory, prepared for publication by Caroline E. Furness; Part 2, A Study of Four Be Stars, by M. Alberta Hawes. Pp. iii+60+5 plates. (Poughkeepsie, N.Y.)

The Indian Forest Records. Vol. 19, Part 8: Entomological Investigations on the Spike Disease of Sandal (18) Fulgoridae (Homopt.). By N. C. Chatterjee and M. Bose. Pp. 14. (Delhi: Manager of Publications.) 5 annas; 6d.

U.S. Department of Agriculture. Miscellaneous Publication No. 186: Reconnaissance Erosion Survey of the Brazos River Watershed, Texas. By H. V. Gelb and Ira T. Goddard. Pp. 47. 10 cents. Technical Bulletin No. 402: Biology and Control of Tree Hoppers injurious to Fruit Trees in the Pacific Northwest. By M. A. Yothers. Pp. 46. 10 cents. (Washington, D.C.: Government Printing Office.)

Veröffentlicheungen aus dem Kaiser Wilhelm-Institut für Silkkat-forschung in Berlin-Dahlem. Herausgegeben von Prof. Dr. Wilhelm Eitel. Band 6. Pp. 234. (Braunschweig: Friedr. Vieweg und Sohn A.-G.) 28 gold marks.

Achema Jahrbuch, Jahrgang 1931-34. Berichte über Stand und Entwicklung des Chemischen Apparatewesens. Begründet von Dr. Max Buchner. Herausgegeben unter Mitwirkung von Fachgenossen aus Wissenschaft und Technik von der Dechema. Pp. 236+xxxiv+44. (Seelze and Berlin: Deutsche Gesellschaft für Chemisches Apparatewesen E.V.) 10 gold marks.

The Science Reports of the Tôhoku Imperial University, Sendai, Japan. Second Series (Geology), Vol. 16, No. 2: Marine Mollusca from the "Ryûkyû Limestone" of Kikai-zima, Ryûkyû Group. By Sitihai Nomura and Noboru Zinbô. Pp. 56+1 plate. (Tôkyô and Sendai: Maruzen Co., Ltd.)

Proceedings of the American Academy of Arts and Sciences. Vol. 69, No. 2: The Rotation of Cobalt and Nickel by Magnetization and the Gyromagnetic Ratios of their Magnetic Elements. By S. J. Barnett. Pp. 119-135. (Boston, Mass.) 45 cents.

N.Z. Department of Scientific and Industrial Research. Apia Observatory, Apia, Western Samoa: Annual Report for 1932. Pp. vii+114. (Wellington, N.Z.: Government Printer.) 5s.

Bulletin of the American Museum of Natural History. Vol. 67, Article 4: Fossil Invertebrata from Northeastern Brazil. By Carlotta Joaquina Maury. Pp. 123-179+plates 9-19. (New York City.)

University Observatory, Oslo. Publication No. 8: i. On the Stability of Atkinson's Star Models; ii. A Note on Stellar Stability. By G. Steensholt. Pp. 8. Publication No. 11: Die Störungen des zirkularen Wirbels einer Homogen-Irkompressiblen Flüssigkeit. Von C. L. Godske. Pp. 130. Publication No. 12: On the Trajectories of Electric Particles in the Field of a Magnetic Dipole with Applications to the Theory of Cosmic Radiation, II. By Carl Størmer. Pp. 47. (Oslo: A. W. Brogers Boktrykkeri A.-S.)

The Imperial College of Tropical Agriculture. The Principal's Report for the Year 1932-33 and the Accounts for the Year ended August 31, 1933. Pp. 32. (Trinidad and London.)

#### CATALOGUES

The N and W Shockproof Mobile X-Ray Unit. (Publication No. 34/01.) Pp. 8. (London: Newton and Wright, Ltd.)  
McGraw-Hill Books on Agriculture, Zoology and Botany, 1934. Pp. 20. (London: McGraw-Hill Publishing Co., Ltd.)

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