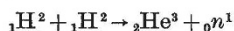


Societies and Academies

LONDON

Royal Society, March 7. C. T. R. WILSON and J. G. WILSON: On the falling cloud-chamber and on a radial-expansion chamber. The advantages of removing a cloud-chamber from a confined space such as that between the poles of a magnet by letting it fall, and photographing the tracks while the chamber is falling freely, are pointed out. A new type of cloud-chamber, which has the form of a shallow cylinder with plane glass ends and in which the motion of the air during expansion is radial, gives good results. It is found, as anticipated, that dropping the cloud-chamber and photographing while it is falling freely enables undistorted track pictures to be obtained (by eliminating gravity) when the interval between expansion and illumination is prolonged to such an extent, that with the cloud-chamber stationary, distortion by convection currents has become serious. P. I. DEE and C. W. GILBERT: The transmutation of heavy hydrogen investigated by the cloud track method. The ${}^3_2\text{He}$ nuclei produced in the reaction



have been detected in the expansion chamber by passing a beam of artificially accelerated ${}_1\text{H}^2$ ions into a gas mixture containing heavy hydrogen. The range of this group of particles has been measured and is 4.3 ± 0.2 mm. for zero bombarding energy. The neutrons produced in the same bombardment have an energy of $1.8 \pm 0.2 \times 10^6$ electron volts. These results are in agreement with the application of the conservation of momentum to the process assumed. A value of 1.0080 ± 0.004 is thereby deduced for the mass of the neutron.

PARIS

Academy of Sciences, January 28 (*C.R.*, 200, 357-428). JEAN TILHO: Some geographical peculiarities of the new Franco-Italian frontier between French Equatorial Africa and the Tripolitaine. Suggestions that in drawing the new frontiers sufficient regard has not been paid to geographical details. LOUIS DE BROGLIE: A remark on the interaction between matter and the electromagnetic field. CHARLES ACHARD and MAURICE PIETTRE: Researches on the protein of the hepatic tissue. Description of results obtained by the application of a new process, in which the pulp mixed with water is projected in a very fine stream against a polished surface cooled to -30°C . WILLIAM BOWIE: The support given to geodesy by the Government of the United States of America. ALBERT FRANCIS BLAKESLEE was elected *Correspondant* for the Section of Botany, in succession to the late R. Chodat. MAURICE FRÉCHET: The general solution of Chapman's equation. JACQUES DELSARTE: Application of the theory of mean periodic functions to the solution of the equations of Fredholm-Nörlund. P. J. MYRBERG: The representation of automorph functions belonging to groups of genus zero. GÉRARD PETIAU: The matrices of the theory of the photon. PIERRE MASSÉ: Various problems on the limits of the theory of intumescences. DANIEL BARBIER, DANIEL CHALONGE and ETIENNE VASSY: The spectro-photometric study of the short wave-length radiation of some stars. A description

of experiments carried out at the Jungfraujoeh Observatory. Measurements were made mainly on stars of types A and B for wave-lengths between 4500 and 3100 Å. CLAUDE CHARMETANT: The electrolysis of zinc chloride in solution in mixtures of water and ethyl alcohol. The effects of varying proportions of alcohol and of different current densities have been studied. PIERRE JACQUET: The mechanism of the action of certain colloids in electrolytic baths. PIERRE JACQUINOT: The fine structure of the components in the Paschen-Back effect in multiplets. ION I. AGARBICEANU: The magnetic weakening of the fluorescence of Te_2 and S_2 . CHARLES DHÉRE and MILE, ANNE RAFFY: The fluorescence spectra of rubene (tetraphenylrubene) in benzene solution and in the solid state. Two reproductions of spectrographs are given. R. AUDUBERT and C. REITHMULLER: The spectral sensibility of photo-electric counters. LÉONARD SOSNOWSKI: The artificial radio-activity excited in gold and the complexity of its radiation. F. FRANÇOIS: The system antimony iodide, potassium iodide, water. JEAN BUREAU: The diagram potassium nitrite-water. The hydrate $\text{KNO}_2 \cdot 0.5\text{H}_2\text{O}$. MARIO PICON: The action of heat on some metallic campho-carbonates. CLÉMENT DUVAL: Can cobalt have a co-ordination number eight? The author, repeating the experiments of K. Matsuno, has been unable to confirm his experimental results and regards his conclusions as doubtful. MARCEL MATHIEU: The structure of trinitrocellulose. Discussion based on X-ray measurements. L. PALFRAY and S. SABETAY: The application of the Cannizzaro reaction to the fatty and arylfatty series. ROBERT TRUFFAULT: The polymerisation of cyclohexene in the presence of phosphoric anhydride. CHARLES PRÉVOST: The synthesis of one of the dihydroanthranediols. JEAN GRARD: The nitration of starch. Nitrating starch by a modified method gave a product containing 11.5-12.5 per cent nitrogen. This is less stable than nitrocellulose and differs from the latter in its properties. PIERRE CHATELAIN: The measurement of the refractive indices of para-azoxyphenetol in the state of anisotropic liquid. HUBERT GARRIGUE: The radioactivity of air in the mountains. HENRI GESLIN and JEAN SERVY: An index characterising dryness from the agronomic point of view. W. KOPACZEWSKI: The jelling of proteins by acids. LAZARE SILBERSTEIN: The chemical composition of bone. The case of the femur of the horse. LUCIEN PLANTEFOL and GEORGES CHAMPETIER: The action of heavy water on the germination of pollen. Comparative study of the germination of pollen grains by ordinary and heavy water. There are marked differences, but heavy water cannot be regarded as toxic to the pollen.

CRACOW

Polish Academy of Science and Letters, January 7. W. JACYNA: Action at close quarters and action at a distance in the characteristic equation of thermodynamics. W. JACYNA: The principle of the predominating influence in the characteristic equation of thermodynamics. K. DZIEWONSKI and M. OTTO: Study on α -methylnaphthalene. MILE, J. WOLOSZYNSKA: The algae of the lakes and marshes of the Tatra. Two Gymnodinians of the lakes 'Morskie Oko' and 'Czarny Staw pod Rysami'. J. TUR: Researches on the embryonic neoplasms. L. W. WISNIEWSKI: *Cercaria dubia*, and its evolution in *Herpobdella atomaria*. ST. MARKOWSKI: The evolutionary cycle of *Bothriocephalus scorpii*.

COPENHAGEN

Royal Danish Academy of Science and Letters, November 2. NIELS BOHR: On the applicability and limitation of the methods of classical physics in the description of collision and radiation processes.

November 30. L. KOLDERUP ROSENVIINGE: Distribution of the Rhodophyceæ in Danish waters. Statistical investigations on the distribution of the Danish Rhodophyceæ show that the number of species decreases greatly from the northern Kattegat to Bornholm. The species dominant in the south, which are, however, common in the northern districts, decrease more rapidly, with the consequence that the northern species are more numerous than the southern in the intermediate zones. ØJVIND WINGE: Experimental alteration of sex chromosomes into autosomes and vice versa, as illustrated by *Lebistes*. The common view concerning the distribution of the sex-determining elements in the sex chromosomes and the autosomes is incorrect. Female, as well as male, genes are present in the autosomes, and by systematic selection of male or female autosomal genes the sex may be changed. In the experimentally produced *Lebistes* race in which both sexes have XX, 50 per cent of each sex are born in the spring, while nearly 100 per cent of females are born during autumn and winter, the external conditions having some influence upon sex determination in this race. Besides normal XX females and XY males, the following types have been produced: XX males, XY females, and YY males. By crossing the XX males to normal females, all the offspring will be female, while YY males give only male offspring when crossed to normal females. XY females crossed to normal XY males give males and females in the proportion 3:1, as expected. The male-determining element in the Y-chromosome is at one end. The gene contents of the sex chromosomes have been partly mapped out.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.*, 20, 601-681, Dec. 15, 1934). T. E. STERNE: The accuracy of least squares solutions. (2) The standard deviation of the errors of linear equations of condition. MARGARET B. SILER: Chromosome numbers in certain Ricciaceæ. Two basic numbers are found, 8 and 9; these include one chromosome very much smaller than the remainder. HENRY E. MERRIAM and JOHN E. RUTZLER, JR.: Reversible coagulation in living tissue (13). Caffeine increases the reflex excitability of the central nervous system from above downwards, and it causes insomnia. It can be counteracted by an appropriate dose of sodium rhodanate. G. A. LEBEDEFF: Genetics of hermaphroditism in *Drosophila virilis*. The third chromosome recessive gene (intersex) causes reversion of homozygous females to sterile males. Modifiers determine the time when this gene becomes active and hence the degree of hermaphroditism. C. W. METZ and E. H. GAY: Organisation of salivary gland chromosomes in *Sciara* in relation to genes. These chromosomes shows 'bands' or 'discs' causing striations similar to those observed in the salivary gland cells of Diptera. The strain of *Sciara* used shows regularly one particular 'vesicle' extending only half-way round the chromosome. Observation of fixed and living material suggests that, in the region of this 'vesicle', the two

component chromosomes are not fused to form a cylinder, but lie side by side. The 'vesicles' or 'segments' of different regions differ slightly and seem to be the 'chromioles' thought by Belling to represent genes. W. E. CASTLE: Body size of reciprocal hybrids in rabbit crosses. If chromosomal genes alone function in the genetic determination of body size, then reciprocal crosses between pure races of different size should give identical results. In such crosses between a large and three smaller races of rabbits, the offspring of large female mated with small male are, however, significantly larger than those of small female crossed with large male. CHESTER STOCK: A Hypertragulid from the Sespe Uppermost Eocene, California. W. W. COBLENTZ and R. STAIR: Ultra-violet transmission changes in glass as a function of the wave-length of the radiation stimulus. Soda-lime-silica and soda-silica glasses show stages in photo-chemical equilibrium which are different for each wave-length of homogeneous radiation to which the glass reacts, and the soda seems to be the sensitive constituent. To attain each stage of equilibrium, transmission may increase or decrease, according to the history of the specimen. For wave-length 254 $m\mu$ and shorter, depth of penetration is small; for wave-length 365 $m\mu$ and longer, penetration is deep. The shortest and the longest wave-lengths used had the greatest photo-chemical effects, namely, in depreciating and appreciating respectively the transmission of a soda-lime-silica glass. J. L. SYNGE: On the expansion or contraction of a symmetrical cloud under the influence of gravity. A discussion employing invariant equations consequent on the usual field equations. JOSEPH HALL BODINE: To what extent is developmental block dependent upon the metabolic activity of the embryonic cell? By immersing grasshopper eggs showing developmental block in hypertonic balanced salt solutions, it is shown that the block is not primarily dependent on the general oxidative metabolism and indeed that the oxygen consumption rate itself is a result of the block. SELIG HECHT: A theoretical basis for intensity discrimination in vision. Photo-reception requires (a) an inactive photo-sensitive substance which absorbs light and is changed by it into an active substance responsible for the nerve impulse; and (b) a mechanism for maintaining the supply of sensitive substance. Equations are developed describing such a photo-chemical system, and they give curves which fit the experimental results for *Drosophila*, the bee, the clam and the human eye. Contrary to earlier results, it is found, in accordance with this theory, that $\Delta I/I$ (where I is intensity), after decreasing rapidly with increase of I , reaches a constant low value and does not rise again after passing through a minimum. J. S. NICHOLAS and DOROTHEA RUDNICK: The development of rat embryos in tissue culture. The medium used was hyperanised rat plasma plus rat embryonic extract. Embryos of presomite to early 5-7 somite stages were observed up to 72 hours after explantation. Growth and differentiation occur, but in 48 hours are one half and three quarters respectively of that of controls. L. H. KLEINHOLZ: Eye-stalk hormone and the movement of distal retinal pigment in *Palaemonetes*. Eye-stalks of this shrimp stimulated by light secrete a hormone causing inward migration of distal pigment cells; no substance of opposite action appears in the dark, so that the outward movement of the pigment cells appears to be inherent in the pigment cells themselves. B. KAUFMANN and

H. D. URSELL: The dissection of closed surfaces and the Phragmen-Brouwer-Alexandroff theorem. WILLIAM W. FLEXNER and MADELINE LEVIN: The intersection of arbitrary chains and its boundary. W. J. TRJITZINSKY: The general case of linear integro-differential equations. JOHN L. VANDERSLICE: Conformal tensor invariants. A. ADRIAN ALBERT: Involutorial simple algebras and real Reimann matrices.

Forthcoming Events

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

Sunday, March 17

BRITISH MUSEUM (NATURAL HISTORY), at 3 and 4.30.—M. Burton: "Myths of the Countryside".*

Monday, March 18

BRITISH MUSEUM (NATURAL HISTORY), at 11.30.—Dr. Hugh Scott: "Insect Collecting in Abyssinia".*

BRITISH PSYCHOLOGICAL SOCIETY (INDUSTRIAL SECTION), at 6.—Dr. Jose Germain: "Industrial Psychology in Spain".

ROYAL GEOGRAPHICAL SOCIETY, at 8.30.—Lieut.-Col. R. B. Seymour Sewell: "The Floor of the Arabian Sea".

Tuesday, March 19

BRITISH INSTITUTE OF PHILOSOPHY, at 8.15.—(at University College, Gower Street, London, W.C.1).—Sir Josiah Stamp: "Can Present Human Motives Work a Planned Society?".*

ROYAL ANTHROPOLOGICAL INSTITUTE, at 8.30.—(at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C.1).—Film of "The Worora Tribe of N.W. Australia: Technology and Ceremonies"; comments by Rev. J. R. B. Love.

"Stonehenge and its Problems"; comments by Gerald Heard.

Wednesday, March 20

ROYAL METEOROLOGICAL SOCIETY, at 7.30.—Dr. F. J. W. Whipple: "The Propagation of Sound to Great Distances" (G. J. Symons Memorial Lecture).

ROYAL SOCIETY OF ARTS, at 8.—Wing Commander T. R. Cave-Browne-Cave: "Exhaust Noise and the other Noises of Motor Transport".

Thursday, March 21

CHEMICAL SOCIETY, at 8.—Discussion on "Recent Progress in the Chemistry of the Terpenes", to be opened by Prof. J. L. Simonsen.

Friday, March 22

QUEEN MARY COLLEGE, at 5.30.—Prof. E. K. Rideal: "Some Problems in Surface Action".*

INSTITUTION OF PROFESSIONAL CIVIL SERVANTS, at 5.30.—(at the Royal Society of Arts, John Street, Adelphi, W.C.2).—Prof. H. Levy: "Science and Social Responsibility".*

BRITISH SCIENCE GUILD AND THE GEOGRAPHICAL ASSOCIATION, at 7.30.—(at the College of Technology, Manchester).—Comm. L. C. Bernacchi: "Antarctic Exploration, Past and Present".*

ROYAL INSTITUTION, at 9.—Prof. B. Melvill Jones: "Speed".

Official Publications Received

GREAT BRITAIN AND IRELAND

Proceedings of the Fourth International Congress for Applied Mechanics, Cambridge, England, July 3rd-9th, 1934. Pp. xviii+283. (Cambridge: Printed at the University Press.)

Technical Publications of the International Tin Research and Development Council. Series A, No. 7: The Determination of the Porosity of Tin Coatings on Steel. By D. J. Macnaughton, S. G. Clarke and J. C. Prytherch. Pp. 9+3 plates. Series A, No. 14: Tin-plate, some Fundamental Considerations. By W. E. Hoare. Pp. 16+4 plates. Series D, No. 1: A Study of the Yellow Stain on Tin-plates. By C. E. Beynon and C. J. Leadbetter, under the supervision of Prof. C. A. Edwards. Pp. 11+4 plates. (London: International Tin Research and Development Council.)

Reports of the Progress of Applied Chemistry. Issued by the Society of Chemical Industry. Vol. 19, 1934. Pp. 840. (London: Society of Chemical Industry.) 12s. 6d.; to Members, 7s. 6d.

College Hall, London (University of London). Fifty-second Annual Report, September 1st, 1933-August 31st, 1934. Pp. 48. (London: College Hall.)

OTHER COUNTRIES

New South Wales: Department of Mines: Geological Survey. Mineral Resources, No. 36: West Darling District; a Geological Reconnaissance with Special Reference to the Resources of Sub-surface Water. By E. J. Kenny. Pp. 180+15 plates. (Sydney: Government Printer.) 6s.

Smithsonian Miscellaneous Collections. Vol. 92, No. 14: Archeological Investigations in the Bay Islands, Spanish Honduras. By William Duncan Strong. (Publication 3290.) Pp. vi+76+33 plates. (Washington, D.C.: Smithsonian Institution.)

India: Meteorological Department. Scientific Notes, Vol. 5, No. 60: A Study of the Atmospheric Horizontal Visibility at Bangalore. By A. Ananthapadmanabha Rao. Pp. 141-157+3 plates. (Delhi: Manager of Publications.) 10 annas; 1s.

Commonwealth of Australia: Council for Scientific and Industrial Research. Pamphlet No. 51: The Chemistry of Australian Timbers. Part 4: A Study of the Lignin Determination, II. By W. E. Cohen. (Division of Forest Products, Technical Paper No. 14.) Pp. 20. (Melbourne: Government Printer.)

Transactions of the National Institute of Sciences of India. Vol. 1, No. 1: Physiology, Bionomics and Evolution of the Air-Breathing Fishes of India. By Dr. S. L. Hora. Pp. 16+1 plate. (Calcutta: National Institute of Sciences of India.)

U.S. Department of Agriculture. Technical Bulletin No. 455: The European Corn Borer and its Controlling Factors in the Orient. By Charles A. Clark. Pp. 38. (Washington, D.C.: Government Printing Office.) 5 cents.

Proceedings of the Boston Society of Natural History. Vol. 40, No. 4: On the Habits and Distribution of Birds on the North Atlantic. By V. C. Wynne-Edwards. Pp. 233-346+plates 3-5. (Boston, Mass.: Boston Society of Natural History.)

U.S. Department of the Interior: Office of Education. Bulletin, 1933, No. 2: Statistical Summary of Education, 1931-32. Prepared by Emery M. Foster. Pp. 12. 5 cents. Bulletin, 1934, No. 8: Supervision exercised by States over Privately Controlled Institutions of Higher Education. By John H. McNeely. Pp. v+64. 10 cents. (Washington, D.C.: Government Printing Office.)

Madras Fisheries Department. Administration Report for the Year 1933-34. By Dr. B. Sundara Raj. Pp. iii+83+3. (Madras: Government Press.) 12 annas.

Jac. Berzelius Brev. Uđgiva av Kungl. Svenska Vetenskapsakademien genom H. G. Söderbaum. Supplement utgivet genom Arne Holmberg: Brev från Berzelius till Thomas Thomson och till Alexandre Brongniart. Pp. 24. (Uppsala: Almqvist and Wiksells Boktryckeri A.-B.)

Smithsonian Institution: United States National Museum. Report on the Progress and Condition of the United States National Museum for the Year ended June 30, 1934. Pp. iii+109. (Washington, D.C.: Government Printing Office.) 15 cents.

Smithsonian Miscellaneous Collections. Vol. 93, No. 2: Mud Shrimps of the Atlantic Coast of North America. By Waldo L. Schmitt. (Publication 3292.) Pp. 21+4 plates. Vol. 93, No. 5: Nomenclature of some Cambrian Trilobites. By Charles Elmer Resser. (Publication 3295.) Pp. 46. (Washington, D.C.: Smithsonian Institution.)

The Museum Journal. Vol. 24, No. 1: Beth-Shan, Earliest Pottery, by G. M. Fitzgerald; Tell Billa, First Assyrian Level, by Charles Bache. Pp. 52. (Philadelphia: University Museum.)

Field Museum of Natural History. Zoological Series, Vol. 18, No. 12: New Fishes obtained by the Crane Pacific Expedition. By Albert W. Herre. (Publication 335.) Pp. 381-438. (Chicago: Field Museum of Natural History.) 50 cents.

Bulletin of the American Museum of Natural History. Vol. 67, Article 9: Catalogue of Mineral Pseudomorphs in the American Museum. By Clifford Frondel. Pp. 389-426. (New York City.)

U.S. Department of the Interior: Office of Education. Vocational Education Bulletin No. 172: Vocational Teacher Training in the Industrial Field. Pp. v+32. 5 cents. Vocational Education Bulletin No. 178: Teaching Farm Credit. Pp. vii+43. 5 cents. (Washington, D.C.: Government Printing Office.)

Proceedings of the United States National Museum. Vol. 83, No. 2973: American Muscoid Flies of the Genera Ceratomyiella and Paradidyma. By H. J. Reinhard. Pp. 9-43. (Washington, D.C.: Government Printing Office.)

The Medical and Scientific Archives of the Adelaide Hospital. No. 13 (for the Year 1933). Pp. 42. (Adelaide: Government Printer.)

Østers og østerkultur i Norge. Av Torbjørn Gaarder og Paul Bjerkan. (Utgitt med bidrag av Fiskeridirektoratet.) Pp. 96. (Bergen: A.-S. John Griegs Boktrykkeri.)

Bergens Museums Skrifter. Nr. 16: Norges Levermoser. Av E. Jørgensen. Pp. 344+25 charts. (Bergen: A.-S. John Griegs Boktrykkeri.)