

Societies and Academies

Dublin

Royal Irish Academy, June 13.

J. J. NOLAN and P. J. NOLAN: Diffusion and fall of atmospheric condensation nuclei (with an appendix by P. G. Gormley). Recalculation of results obtained previously by Nolan and Guerrini give for the diffusion coefficients of nuclei, held during the experiment in a water-sealed gasometer, the value $D = 12 \times 10^{-6}$ cm.²/sec. New experiments with nuclei held in an oil-sealed gasometer give $D = 20 \times 10^{-6}$ cm.²/sec. The values of the radii of the nuclei deduced from these results are 3.55 and 2.68×10^{-6} cm. respectively.

DOROTHY HILL and L. B. SMYTH: The identity of *Monilopora* (Nicholson and Ethridge, 1879) with *Cladochonus* (McCoy, 1847). The genoelectotype of *Cladochonus* McCoy, 1847, is *C. tenuicollis* McCoy. The type specimen of this, from the Carboniferous of New South Wales, has been sectioned, and is here figured and described. The types of *C. bacillarius* McCoy and *C. crassus* McCoy are from the Carboniferous of Co. Donegal, Ireland. The latter species was made the type of *Monilopora* Nich. and Eth., 1879, the distinguishing features being the unique reticulate tissue, and the attachment to a crinoid columnal. Work on new material from Doorin Point, halfway between the two type localities, has revealed: (a) that *C. bacillarius* and *C. (Monilopora) crassus* are parts of the same organism, the upright zig-zag *bacillarius* phase arising from the creeping ring-like *crassus* phase; (b) that the reticulate tissue occurs in the calice wall of both; (c) that the *crassus* phase is not confined to a crinoid stem as a support, a specimen having been found attached to a bryozoan, and several with an empty ring. The reconstructed organism is assigned to *Cladochonus*; *Monilopora* is discarded and *crassus* is chosen as the specific name.

Paris

Academy of Sciences, June 8 (C.R., 206, 689-1768).

ELIE CARTAN: Generalized spaces and the integration of certain classes of differential equations.

HENRI DEVAUX and LOUIS PALLU: A macroscopic representation of monomolecular films and their behaviour in various states of compression. Description of experiments on the distribution of rape seed on the surface of a sheet of mercury. The results confirm the generally admitted interpretation of the arrangement of the molecules in monomolecular layers.

MARC KRASNER: A generalization of the local theory of bodies of classes. Value of the conductor. Interpretation of a formula of Artin. Law of limitation for Galoisian extensions.

PAUL LÉVY: Correction to a previous note.

TH. MOTZKIN: Plane arcs, the osculating curves of which do not cut.

NICOLAS BOURBAKI: Banach spaces.

HEINRICH BEHNKE and KARL STEIN: Convergent suites of domains of holomorphy.

HENRI PAILLOUX: The equilibrium of certain deformable membranes.

LÉOPOLD ESCANDE: New experimental researches on flow through a submerged valve gate.

J. GÉHÉNIAT: Study of the interaction between a photon and an electron, by wave mechanics.

MME. MARIE ANTOINETTE TONNELAT-BAUDOT: The equation of propagation of the photon in a non-Euclidian space.

MAURICE BAYEN: Measurement of the dispersion of the ultra-violet refraction of heavy water.

MAURICE PARODI: The vibrations of some fluorine compounds.

JEAN ROUVILLOIS and HENRI MURAOUR: The study of the transformation of a band spectrum into a continuous spectrum under the influence of pressure.

PIERRE AUGER, RAYMOND MAZE and MME. THÉRÈSE GRIVET-MEYER: Large atmospheric cosmic sprays containing ultra-penetrating corpuscles.

HENRI MURAOUR and GABRIEL AUNIS: Verification of the law of combustion by parallel layers for colloidal powders.

ENRIQUE MOLES, MME. T. TORAL and A. ESCRIBANO: The limiting density of the gas SO₂. The atomic weight of sulphur. The mean figure for the normal density was 2.92655, giving 2.85794 as the limiting density. From this, the atomic weight of sulphur is deduced as 32.062.

THADÉE PECZALSKI: The sublimation and mutual diffusion of salts and of metals.

MARCUS BRUTZCUS: The theory of heterogeneous catalysis.

ANDRÉ BOULLÉ: Sodium tetrametaphosphate.

MME. FRANCE BLOCH: The constitution of the thioacids. From a study of the absorption spectrum in the infra-red it is concluded that if thioacetic acid is a mixture of the two tautomeric forms, CH₂CO.SH and CH₂CS.OH, the amount of the latter form is very small.

Z. CHARLES GLACET and JOSEPH WIEMANN: Duplicative reductions.

ALFRED SILBERSTEIN: The crystalline structure of ammonium cupridiammoniotetrachloride.

GILBERT MATHIEU: Discovery of an Ordovician fauna in the synclinal of Saint-Pierre-du-Chemin (Vendée).

PIERRE COMTE: The upper Famennian in the Cantabrian Cordillera.

ANDRÉ CAILLEUX: Pebbles shaped by the wind in the Quaternary in the south of Brittany.

LOUIS BESSE: Experimental study of the velocity of fall of plane particles in a viscous medium. It is impossible to apply Stokes's law, even in a form embodying corrections, to non-spherical particles.

GEORGES DÉJARDIN and RENÉ BERNARD: The bands of the (OH) molecule in the spectrum of the night sky.

ANDRÉ RENAUD: A halo at the surface of snow.

PIERRE DANGEARD: The enumeration of the chromocentres in the quiescent or interphase nucleus.

J. RABATÉ and A. GOUREVITCH: The presence of *l*-tartaric acid in the leaves and fruits of *Bauhinia reticulata*. This is the first example of laevotartaric acid being extracted from a plant. The leaves or fruits yield 4-6 per cent of the pure acid.

OTTAVIO MUNERATI: The possibility of forcing beetroots to give stems outside the normal time.

PHILIPPE JOYET-LAVERGNE: The mechanism of the action of the X-rays on the cytoplasm of the cell.

MME. PAULETTE BERTHIER: The action of electrolytes on the surface tension of saponin solutions.

GEORGES MOURIQUAND, JACQUES ROLLET and MME. ADELA PAPE: Chronic A avitaminosis.

Amsterdam

Royal Netherlands Academy (*Proc.*, 41, No. 5, 1938).

J. G. VAN DER CORPUT: Contribution to the additive theory of numbers (3).

R. WEITZENBÖCK: On trivectors (7).

E. COHEN and W. A. T. COHEN DE MEESTER: Acute tin plague. (2) The very great influence of small quantities of aluminium alloyed with tin on the rate of change of white tin into grey tin is closely connected with the effect of traces of water on such alloys as observed by Heyn and Wetzell.

P. P. BIJLAARD: A theory of plastic buckling with its application to geophysics.

A. ERDÉLYI: Some integral formulæ for Whittaker functions.

C. VISSER: The iteration of linear operators in a Hilbert space.

J. A. BARRAU: Generalizations of Steiner's Roman surface.

O. BOTTEMA: Families of quadratic varieties.

H. J. DE BOER: A period of 5.25 years in rainfall, temperature and pressure.

ANNA M. A. VAN SANTEN: Influence of hydrogen ion concentration on the growth-rate of the *Avena* coleoptile. The curve representing the growth-rate of excised coleoptile sections of *Avena* in 0.01 molar phosphate buffer solutions as a function of pH coincides in part with the dissociation curve of auxin, indicating that the growth substance is only active in its undissociated acid form.

ONG SIAN GWAN: Exaltation and maintenance of the virulence, variation of the rate of agglutination, increase of the velocity of displacement and of propagation of *B. coli*.

Capetown

Royal Society of South Africa, May 18.

H. B. FANTHAM (the late): *Lecithostaphylus canthari*, n.sp., a trematode parasite of the hottentot fish, *Spondyliosoma blochii*, of South African waters.

E. H. ASHTON: A sociological sketch of Southern Sotho diet.

Moscow

Academy of Sciences (*C.R.*, 18, No. 9, 1938).

M. KREIN: The best approximation of the continuous functions.

M. A. RUTMANN: A special class of wholly continuous linear operators.

L. S. GILMAN: Application of the conformic representation to the solution of a problem in the theory of elasticity.

P. A. WALTHER and W. A. STEFANOWSKI: Comparison between two axial pumps, one calculated according to the Joukowski theory, and the other according to that of the triangle of velocities.

J. A. ALPERT, V. V. MIGULIN and P. A. RIASIN: Dispersion of electro-magnetic waves above the earth's surface.

A. GORODEZKAYA and A. FRUMKIN: Investigation of thin layers of organic substances at the mercury/solution boundary by the method of capacity measurements. (1) High-molecular alcohols and acids.

ANNA GELMAN and M. BAUMAN: Compounds of platinum and carbon monoxide.

E. A. ŠILOV: Transmitting mechanisms of organic reactions.

V. S. BYKOVA: Quantitative separation of niobium and titanium.

V. S. BUTKEWITCH, E. MENZHINSKAIA and E. I. TROFIMOVA: Glucuronic acid as an intermediate phase in the formation of citric acid from sugar.

V. S. BUTKEWITCH: The question of intermediate phases of biochemical transformation of sugar into citric acid.

K. V. RADUGIN: The Salair folding.

B. M. KELLER: Eocene sediments of the Tuapse region.

D. S. BELIANKIN: Characteristics of the mineral 'monothermite'.

M. A. ROSANOVA: Polymorphic type of the origin of species.

H. F. KUSHNER: Composition of blood of camels in relation to their working ability.

B. A. ZENKOVIČ: The temperature of whales.

N. A. MANUILOVA: Lens-building power of the eye-cup in Amphibia as affected by repeated induction.

N. A. MANUILOVA, A. I. MACHABELI and T. A. SIKHARULIDZE: Investigation of the morphogenetic properties of the eye-cup in tail-less Amphibia.

Washington, D.C.

National Academy of Sciences (*Proc.*, 24, 199-227; May 15, 1938).

G. A. MILLER: (1) Relative numbers of operators and subgroups of a finite group. (2) Minimum degree of substitutions of highest degree in a group.

C. E. BUCHWALD, D. M. GALLAGHER, C. P. HASKINS, E. M. THATCHER and P. A. ZAHL: Measurements of resistance and capacity of monofilms of barium stearate. For this purpose, a standard a.c. bridge (0.25 volt at 1000 cycles) was used, with one arm modified to allow preliminary balancing of the 'unfilmed' cell.

D. F. JONES: Translocation in relation to mosaic formation in maize.

R. D. GORDON: Estimating bacterial populations by the dilution method. Halvorson and Ziegler's tables, which give an estimate of the mean density of viable bacteria in the middle of three successive dilutions, using a dilution of 10:1 and three sets of ten test-tubes, are apparently based on Fisher's criterion of maximum likelihood. A better result is obtained by using the geometric mean, and appropriate formulæ are deduced.

W. J. CROZIER, E. WOLF and GERTRUD ZERRAHN-WOLF: (1) Temperature and the critical intensity for response to visual flicker. Experiments on the turtle indicate that the shape of the curve of flash frequency (F) against logarithm of the critical intensity for 'recognition' of flicker (I) is unaffected by change of temperature, the whole curve being shifted to lower intensities with rise of temperature. It is suggested that recognition of flicker is governed by the velocity of a terminal reaction affecting several nervous elements, and that this reaction involves at least two steps of a catalytic nature. (2) Specific constants for visual excitation (ii). Experiments with albino teleosts gave curves for F against $\log I$ which correspond exactly with those of normal fish of the same stock.

E. GUTH and A. E. HAAS: Relation between Stefan's radiation law, Nernst's heat theorem and Maxwell's formula for the radiation pressure.