

progress of general science that the Rev. Mr. Whewell, of Trinity College, Cambridge, is engaged in endeavouring to advance the important, and hitherto comparatively neglected, science of the tides, the first results of these investigations being the memoirs on, and map of cotidal lines, contained in the *Transactions of the Royal Society of London*, for 1833. Through the kindness of a mutual friend, I have received the articles, also from the pen of Mr. Whewell, on the subject just referred to, which accompany this note, and which I should feel obliged by your inserting in that part of the *Journal* of the Institute where they will be most likely to meet the eye of anyone who may be disposed to contribute good tide observations to the stocks which Mr. Whewell is now accumulating for the further elucidation of the subject."

Paris Geographical Society and Sir John Ross

On September 1, 1834, Sir John Ross on receiving the Gold Medal of the Paris Geographical Society (*Bull. Soc. de Géog. Paris*, ser. 2, 1), wrote:

"Gentlemen—M. de Bacourt, Chargé d'Affaires de France, has remitted your letter of April 13, accompanied by the gold medal of your Society. I beg to assure the learned and distinguished members of the gratification which I feel, following my return to Europe after a voyage of unusual length and difficulty. Nothing could have afforded me greater pleasure than the honourable and enviable dignity that the Society has conferred. Inspired by these sentiments, the gold medal, awarded in a manner so flattering, will be transmitted to my descendants as a precious witness of the esteem entertained by the Society for my efforts for the advancement of geographical knowledge. I beg you to believe that I am not less sensible of the flattering expressions which marked the occasion of the gift.

Your most obedient and most humble Servant,
John Ross."

Draper on Capillary Attraction

John William Draper (1811–1882), the father of Henry Draper (1837–1882), was born in England but at the age of twenty-one years emigrated to the United States. While a student in the University of Pennsylvania he made experiments on capillary attraction, an account of which was published in the September number of the *Journal of the Franklin Institute* for 1834. After reviewing what was then known of the subject, he said: "This was the state in which I found capillary attraction; my attention was first drawn to it during those tiresome moments of returning health which follow an autumnal fever. Perhaps, if there be any merit in these experiments, it may hereafter be of service to someone to know that they were begun in sickness and in a land of strangers; they were pursued in all the calamity of family bereavement and in the depths of forests, alike unused to music, to poetry or to philosophy. Solitude if it be conducive to the development of intellect, and favourable to the exercise of thought, is likewise attended with many evils. Though no disturbance arises from the intrusion of the frivolous, yet the counsel and assistance of the wise are wanting, and, indeed, those advantages which are supposed to result from such tranquillity are, for the most part, only fictitious appearances, which like certain other apparitions, everyone can discourse of, but no one can say he has seen."

Societies and Academies

PARIS

Academy of Sciences, July 2 (*C.R.*, 199, 1–104).
A. LACROIX: New observations on the distribution of tectites in Indo-China and in the neighbouring countries. **GIUSEPPE SANARELLI** was elected *Correspondant* for the Section of Medicine and Surgery in succession to the late J. Cantacuzène. **BERTRAND GAMBIE**: Tetrahedra inscribed in a Σ quadric and with edges tangent to a quadric *S*. **POTOTZKI**: The determination of complexes all the congruences of which are *W*. **A. ROSENBLATT**: The application of Picard's method of successive approximations to the study of certain partial differential equations of the parabolic type with two independent variables. **LÉON MOTCHANE**: The distribution of the points of continuity of a function of *n* variables continuous with respect to each of them. **V. NIEMYTSKI**: Unstable dynamical systems. **HEINRICH HILMY**: Movements stable in the Poisson sense and the recurrent movements of a dynamical system. **BERNARD KWAL**: The tensorial fields which accompany Dirac's electron: the theory of the neutrino and the antineutrino. **JEAN PONTREMOLI** and **MAX SERRUYS**: The influence of anti-detonants on the velocity of combustion and the temperature of exhaust in internal combustion motors. **ANDRÉ COUDER**: The compensation of double refraction in astronomical objectives. Discussion of the effects produced in telescope objectives by double refraction due to insufficient annealing. The use of a compensator consisting of a plate of Iceland spar is suggested. Results of experiments made with the large equatorial at the Strasbourg Observatory are given, showing the value of the compensator. **J. GAUZIT**: The ultra-violet extremity of the spectrum of the night sky. One interesting result obtained was the presence of emission lines in the region of the large absorption band of atmospheric ozone: work in confirmation of this is in hand. **FERNAND BALDET**: The continuous spectrum of comets. **A. PORTEVIN** and **D. SÉFÉRIAN**: Experimental study of the thermal state during autogenous welding. **MILLE, N. CHOUCROUN**: The superficial electric moments in the interior of a liquid. **JAMES BASSET**: The influence of pressure on the electrical resistance of a rod of impure zirconium oxide in air. At constant temperature, the resistance of the zirconia rod increases with the pressure. In air at 900° C. a rod having a resistance of 4,500 ohms under atmospheric pressure alters to more than a million ohms under 4,000 kgm./cm.². **LÉON BLOCH**, **EUGÈNE BLOCH** and **PIERRE LACROUTE**: The analysis of the first spark spectrum of bromine. **JEAN BOUCHARD**: The influence of viscosity on the decrease of the fluorescent power of solutions of certain colouring materials as a function of the concentration. **G. MONOD-HERZEN**: The energy of linkage, the mass of the neutron and the grouping of atomic nuclei. **WALTER M. ELSASSER**: The linkage energies in the radioactive families of uranium-radium and thorium. **JEAN PERREU**: The heat of crystallisation of hydrated salts in slightly supersaturated solution. **JEAN AMIEL**: The preparation and explosion temperature of some complex compounds of copper chlorates with the primary amines. **PIERRE JOLIBOIS**: The chemical reactions in different parts of a tube containing rarefied gas. **MARCEL MATHIEU**: The study by Röntgen rays of the fixation of acetone

by nitrocellulose. In the experimental arrangement, the effect of the absorption of acetone on the nitrocellulose could be studied continuously. At no stage was there any indication of the formation of a definite compound. The sudden disappearance of the crystalline structure defined the formation of a gel. MAURICE BILLY and MARC ANTOINE FOEX: Mineral precipitations in glasses. Investigations with alkaline glasses (silicate, borate, phosphate) with copper, gold, silver and other metals. MARCEL BALLAY: The preparation of brilliant electrolytic deposits of nickel in the presence of colloids. WENLI YEH: The frequency of the number of isotopes of the chemical elements. The author shows that elements of odd atomic number should have a smaller number of isotopes than either of the neighbouring elements, and deduces that argon should have three isotopes instead of two, chlorine should have only two isotopes and palladium should have three isotopes instead of one. T. KARANTASSIS and L. CAPATOS: Some complex compounds of germanous bromide with caesium bromide and with the bromides of organic bases. LÉON PIAUX: The influence of various radicals on the characteristic frequency of the ethylene linkage in cyclopentene derivatives. C. V. GHEORGHIU: The mechanism of the ionic dissociation of 2-thio-4-oxytetrahydroquinazoline derivatives and the corresponding oxygen derivatives. GEORGES RICHARD: The action of potassium cyanide on an α -chloroketone. By an abnormal reaction an ethylene oxide derivative is produced. ANDRÉ A. POLICARD: The constitution and absorption in the ultra-violet of the ethyl diphenylmuconates. CHARLES DUFRAISSE and JEAN LE BRAZ: Applications of the antioxygen effect to the problem of fire fighting. The extinction of flames. L. DONCIEUX, R. PAVANS DE CECCATTY and M. SOLIGNAC: The presence of fragments of nummulitic limestone in certain Quaternary pebbles of the region of Médenine. G. SCHNEIDER: Conclusions drawn from some exact measurements of the yield of the thermal springs of Aix-les-Bains: H. VAUTRIN: The orogenesis of the Hermon (Syria) massif. H. S. REED and T. FRÉMONT: The reactions of the root cells of *Citrus* to infection by the mycorrhiza. ANTOINE DE CUGNAC and FERNAND OBATON: Some peculiarities of the floral biology of the Gramineæ. R. FAILLIÉ, R. JONNARD and H. VIAL DE SACHY: The variation of the constriction of the pupil with illumination. PIERRE MOLLARET: Modifications of the chronaxies of antagonistic stimuli under the influence of local and contralateral posture in the dog. H. BORDIER: Some experimental results furnished by the heliochromometer. Applications to meteorology and to climatology. JEAN COURTOIS: The influence of the reaction of the medium on the hydrolysis of α - and β -glycerophosphoric acids by taka diastase. MME. ANDRÉE ROCHE and JOSEPH BRACCO: Contribution to the study of the molecular weight of the globulins of blood serum. RADU CODREANU: The relations between the development of *Symbiocladius rithogenæ* and the growth of its ephemeral host. FRÉDÉRIC DIENERT, PIERRE ETRILLARD and MME. MADELEINE LAMBERT: Research on bacteriophage in waters.

CRACOW

Polish Academy of Science and Letters, May 7. T. HUBER: The analogy of a certain problem of the equilibrium of slightly curved thin elastic bars with

a simple case of forced oscillations. I. ADAMCZEWSKI: The mobility of the ions in dielectric liquids. In the method used by the author the ions are produced by X-rays. The measurements prove the existence of three kinds of ions in pentane, hexane and heptane. There is a close relation between the mobilities and the viscosity coefficients of the liquids studied. MLLE. A. FATERSON: Re-emission in the fluorescence of the bands of mercury vapour. The experiments confirm the hypothesis of the molecular, and not atomic, origin of the phenomenon of re-emission. L. MARCHLEWSKI and J. ZGLECZEWSKI: The absorption of ultra-violet rays by certain organic substances (37). A. SWARYCZEWSKI: The mono-, bi- and trichromates of guanidine. W. SZYMONOWICZ: Langerhans cells in the tactile hairs. J. ZACWILICHOWSKI: The innervation and sensorial organs of the wings of *Stauroderus biguttulus*.

ROME

Royal National Academy of the Lincei, March 4. T. LEVI-CIVITA: Stationary solutions of Pfaffian systems. G. ARMELLINI: Horizontal diameter of the sun in 1931, 1932 and 1933. The mean of the values obtained in 1931 at four observatories for the solar radius was 961.65". For 1932, three observers (one ceased measuring) found a diminution, the mean value being 961.56". In each case a higher result was obtained in 1933, the mean being 961.71". These variations may possibly be related to the sunspot frequency and to the general activity of the sun. U. BROGGI: Generalised method of Euler's summation. B. SEGRE: Integrals of binomial differentials. G. LAMPARIELLO: A noteworthy class of non-linear differential equations of the second order. (1) Preliminaries and reduction to the first order. F. CONFORTO: Construction of automorphous functions by means of infinite products (1). L. GEYMONAT and M. ZEULI: Generalisation of certain concepts and formulæ of differential geometry of the Riemannian varieties. M. MANARINI: Considerations on the absolute vectorial calculus in a V_3 and on double tensors with a single divergence. A. ROSENBLATT: Non-linear m -harmonic equations with two independent variables (2). R. EINAUDI: Cauchy's problem relating to superficial elastic waves. A. DE MIRA FERNANDES: The unitary theory of physical space and the relativistic equations of atomic mechanics. G. C. WICK: The radioactive elements of F. Joliot and I. Curie. The theory of β -disintegration, recently proposed by Fermi, is applied to the radioactive phenomena lately observed by Joliot and Curie. R. L. GOMES: Dirac's matrices in a Riemannian space. R. ZAIKOFF: Generalised wave mechanics. (3) Wave equations for positive and negative electrons. Introduction of a Hamiltonian function. General form of the electric quadri-current. S. BERLINGOZZI: Method of preparing aromatic nitro-ketones. Treatment of an aromatic nitro-aldehyde with a magnesium aryl halide yields a nitro-carbinol, which gives the corresponding nitro-ketone on oxidation with chromic anhydride. A. BELLUGI: Individualisation and determination of buried basaltic dykes and infiltrations by the Wenner geo-electric method. S. SORRENTINO: The presence of an Oligocene soil in the neighbourhood of Buonalbergo (Benevento). L. TREVISAN: Preliminary observations on the fauna of the Cretaceous in Sicily. G. BRUNELLI and G. CANNICCI: Preliminary notes on the chemical and biological

characteristics of Lake Sabaudia (Paola). MARIA VENTURA: Embryological observations on *Manihot palmata*, Muell. *M. palmata* follows the ordinary type of formation of the macrospores. The female adult gametophyte is octonucleate. O. VERONA: Microbiological study of a peaty soil. A. DE AGAZIO: Action of ephedrine and adrenaline on the isolated heart of *Bufo-vulgaris*.

VIENNA

Academy of Sciences, May 11. WILHELM FIGDOR: Generatively increased descendants of *Bryophyllum calycinum*, Salisb. BERTA KARLIK and ELISABETH RONA: Investigations on the dependence of the range of polonium α -rays on the intensity of the radiation, the age of the preparation, and the nature of the foundation. FRANZ HERITSCH: The age of the Trogkofel chalk. RUDOLF WAGNER: The existence of F-helical symposes. FRITZ FRÜCHTL: Adriatic plankton copepods.

May 17. HILMAR SCHUMANN: Petrographic phenomena in the Seckauer Tauern. FRANZ RÜCKER: Reflective power of animal surfaces in the ultra-red region of the spectrum. Even with insects, for which numerous and comprehensive measurements have been made, no general relation between their reflective power and the radiation-climate prevailing in the regions where they occur, appears to exist. KARL MORSCH: β -Ureidocarboxylic acids and dihydro-uracils: (1) β -Phenylureidocarboxylic esters and 3-phenyldihydrouracils. GUNTER LOCK: Cannizzaro's reaction (3). The experiments have been extended to halogen derivatives of dihydroxybenzaldehydes and their methyl esters. GEORG WALTER: Action of chlorosulphonic acid on naphthalene. Under certain conditions, the sulphochlorinating reaction is replaced by chlorinating and oxidising reactions. A. LUSZCZAK and L. GRÜN: The colour of mercapto and methylmercapto dyes of α - and β -naphthols. Spectro-analytical investigation of these dyes reveals certain regularities. GUSTAV ORTNER and JOSEF SCHINTLMEISTER: Radioactivity of samarium. FRIEDRICH LAUSCHER and WILHELM SCHWABL: Investigations on the brightness in woods and at their edges. FRITZ KERNER-MARILAUN: Evidence of the climate of the Gosau formation. KARL STRUBERCKER: Constructions in Laguerre geometry. HARALD EGBERT HOCHSTETER: The fauna of the Walbersdorf 'tegel'. ALFRED FRÖHLICH and EMIL ZAK: (1) The ability of lung-tissue to regulate the water-content of the blood of the lungs. The water-content of rabbit's blood is the same in the right and left ventricles. If, however, the blood is thickened by the introduction of glycerin or 20 per cent sodium sulphate solution into the abdominal cavity, the thickened blood is detectable in the right ventricle, but after the blood has passed through the lungs, its water-content rises. (2) Influence of purine derivatives on the permeability of the heart. By these derivatives the penetration of foreign substances, not only into the central nervous system, but also into the heart, is facilitated. HANS MAUTNER and ALFRED EBEL: Influence of saporifics on the course of infections. GABRIELE FEHÉR and LEO POLLAK: Distribution and degradation of injected galactose in the organs of the animal body. W. ANTOPOL and R. RÖSSLER: The heart-action in the dog of vasopressin extracts.

Official Publications Received

GREAT BRITAIN AND IRELAND

Medical Research Council. Fourteenth Annual Report of the Industrial Health Research Board to 30th June 1934. Pp. ii+34. (London: H.M. Stationery Office.) 9d. net.

The Scientific Proceedings of the Royal Dublin Society. Vol. 21 (N.S.), No. 8: The Chemical Constituents of Lichens found in Ireland. *Buellia canescens*, Part 1. By Dr. T. J. Nolan. Pp. 67-71+plate 2. 1s. Vol. 21 (N.S.), No. 9: Derangement of the Digestive Processes in the Milk-fed Calf due to Abnormal Curd Formation in the Fourth Stomach. By E. J. Sheehy. Pp. 73-85. 1s. Vol. 21 (N.S.), No. 11: Investigations on the Cryoscopy of Milk. By J. J. Ryan and G. T. Pyne. Pp. 113-122. 6d. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.)

Technical College, Bradford. Diploma and Special Day Courses, Session 1934-1935. Pp. 246+20 plates. (Bradford.)

Further Experiments on Cylinder Wear. By C. G. Williams. (No. 7500, B. Class 42, 251.) Pp. 21. (London: Institution of Automobile Engineers.)

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

Birkbeck College (University of London). Philosophy and Politics: being the Sixth Annual Haldane Memorial Lecture, delivered by Prof. Ernest Barker, June 5, 1934. Pp. 18. (London.)

OTHER COUNTRIES

Ministry of Public Works, Egypt: Physical Department. The Nile Basin. By Dr. H. E. Hurst and Dr. P. Phillips. Supplement to Vol. 4: Ten-Day Mean and Monthly Mean Discharges of the Nile for the Years 1928-1932 and Normals for the Period 1912-1932. (Physical Department Paper No. 31.) Pp. vi+259. (Cairo: Government Press.) 50 P.T.; 10s.

Government of India: Department of Industries and Labour (Public Works Branch). Irrigation in India: Review for 1931-32. Pp. 51. (Delhi: Manager of Publications.)

The Indian Lac Research Institute. Bulletin No. 18: Modifications of Shellac. Part 1: The Effect of Sulphur. By M. Venugopalan. Pp. 12. (Nankun.) 1 rupee.

Publications of the Kapteyn Astronomical Laboratory at Groningen. No. 46: The Coefficient of Differential Galactic Absorption. By J. J. Raimond, Jr. Pp. ii+46. (Groningen: Hoitsema Bros.)

Field Museum of Natural History. Anthropological Series, Vol. 21, No. 2: The Ovimbundu of Angola. By Wilfrid D. Hambly. (Frederick H. Rawson—Field Museum Ethnological Expedition to West Africa, 1929-30.) (Publication 329.) Pp. ii+89-362+plates 9-92. (Chicago.) 2.75 dollars.

Statens Meteorologisk-Hydrografiska Anstalt. Årsbok, 13, 1931. iv. Meteorologiska iakttagelser i Sverige, Band 73. Pp. x+107. (Stockholm.) 7.00 kr.

Report of His Majesty's Astronomer at the Cape of Good Hope to the Secretary of the Admiralty for the Year 1933. Pp. 12. (Cape of Good Hope: Royal Observatory.)

Comité International des Poids et Mesures. Procès-verbaux des séances. Série 2, Tome 15: Session de 1933. Pp. vii+215. Série 2, Tome 16: Annexes du Comité consultatif d'Électricité et de Photométrie, Mémoires présentés à la session de 1933. Pp. viii+342. (Paris: Gauthier-Villars.)

Annales de l'Institut de Physique du Globe de l'Université de Paris et du Bureau central de Magnétisme terrestre. Publiées par les soins de Prof. Ch. Maurain. Tome 12. Pp. iii+92. (Paris: Les Presses universitaires de France.)

Travaux et mémoires du Bureau International des Poids et Mesures. Publiés sous les auspices du Comité International par le Directeur du Bureau. Tome 19. Pp. vi+74+127+54+97+48+7. (Paris: Gauthier-Villars.)

U.S. Department of Agriculture. Technical Bulletin No. 418: Transmission of Anaplasmosis by various Species of Ticks. By Charles W. Rees. Pp. 18. (Washington, D.C.: Government Printing Office.) 5 cents.

U.S. Department of the Interior: Geological Survey. Water-Supply Paper 728: Surface Water Supply of the United States, 1932. Part 3: Ohio River Basin. Pp. x+370. (Washington, D.C.: Government Printing Office.) 20 cents.

Smithsonian Miscellaneous Collections. Vol. 91, No. 15: Reports on the Collections obtained by the First Johnson-Smithsonian Deep-Sea Expedition to the Puerto Rican Deep. Two New Congrid Eels and a New Flatfish. By Earl D. Reid. (Publications 3251.) Pp. 11+1 plate. (Washington, D.C.: Smithsonian Institution.)

Zoologica: Scientific Contributions to the New York Zoological Society. Vol. 17, No. 1: A Review of the Box Turtles. By Raymond L. Ditmars. Pp. 44. Vol. 18, No. 1: An Experimental Study of the Reproductive Habits and Life History of the Cichlid Fish, *Aequidens latifrons* (Steindachner). By C. M. Breder, Jr. Pp. 42. (New York City.)

Cornell University: Agricultural Experiment Station. Bulletin 587: The Rural Churches of Allegany County. By William G. Mather, Jr. Pp. 32. Bulletin 588: History, Culture and Varieties of Summer-Flowering Phloxes. By A. M. S. Pridham. Pp. 32. Bulletin 591: Movement of Population to and from New York State. By W. A. Anderson. Pp. 36. Bulletin 595: The Rural Homes of City Workers and the Urban-Rural Migration. By Leland B. Tate. Pp. 54. Bulletin 599: Studies of the Effects of Handling Methods on the Quality of Market Peas. By F. S. Jamison. Pp. 28. Bulletin 603: An Investigation of the Cause of the Stiff-Lamb Disease. By John P. Willman, S. A. Asdell and Peter Olafson. Pp. 20. Memoir 153: Brand Canker of Rose, caused by *Coniothyrium vernsdorffiae* Laubert. By Cynthia Westcott. Pp. 39. (Ithaca, N.Y.)

Museums of the Brooklyn Institute of Arts and Sciences. Report upon the Condition and Progress of the Museums for the Year ending December 31, 1933. By William Henry Fox. Pp. 64+6 plates. (Brooklyn, N.Y.)