

cost between £3 and £5 per mile, or for the four wires under £20. Now they had been obliged on the Birmingham and Liverpool railroad to use a very much more expensive telegraph, to give notice of trains coming to tunnels or places where they cross, by means of long iron tubes through which a blast of air is sent which blows a whistle at the end. So when this new rope with the four copper wires is substituted, we shall have not only railway news but all others sent out with the speed of lightning, ciphers being used for private confab. A few days after I left, a tarred rope was to be continued from the end of the four miles of wire, and thrown into the Thames and then carried to the shot tower on the other side, and the rapidity of conveying intelligence through about five miles was to be tried. So perhaps a rope in the sea may carry news from Dublin to Holyhead. . . ."

Captain Graah's Expedition to Greenland

In the *Athenæum* of June 24, 1837, is a review of the "Narrative of an Expedition to the East Coast of Greenland by Captain W. A. Graah, of the Danish Royal Navy". Captain Graah had proceeded to Greenland at the command of the King of Denmark. He arrived off the coast in May 1828, spent ten months examining the coast towards Cape Farewell and in 1829-30 proceeded to explore the eastern side of Greenland in boats. "The expedition of Captain Graah", said the *Athenæum*, "appears to set at rest for ever the question which it was designed to elucidate. That able officer explored the east coast of Greenland as far north as the latitude of Iceland; he sojourned on it a year and a half; and yet he discovered no vestiges whatever of ancient Icelandic civilization. He found there no iron, no bell metal, no stones with inscriptions or other relics, such as are found on the western coast; and he was assured by the natives, who are well acquainted with the interior of their firths, that they never saw nor heard of ruins in their country."

Autopsy on William IV

THE *London Medical Gazette* of June 24, 1837, contains the following account of the post-mortem examination on William IV, who died on June 20, aged seventy-one years. "On opening the body the heart was perceived to be enlarged and flabby, with a few shreds of soft lymph gluing the surfaces of the pericardium together. The right side was comparatively healthy, but the left side showed very extensive disease of both sets of valves; those of the aorta were ossified, presenting an obstruction to the passage of blood into that vessel, which was rough on its internal surface, but without dilatation. The mitral valves were also ossified, and suffered the blood to regurgitate. The tendency to bony degeneration extended to the respiratory organs, the larynx, trachea, and even the bronchi, being ossified. The left lung was greatly gorged, and the pleuræ on this side firmly united by thick adhesions of ancient date. In the right cavity of the chest were some 12 or 14 ounces of serous fluid, probably poured out during the few days immediately preceding dissolution. The liver was enlarged and granulated; there was also slight granular disease of one kidney. To the medical reader it will be obvious that the deficiency in the general circulation and the overloaded state of the lungs are clearly explained by the dilatation without hypertrophy of the left ventricle, the obstruction of the aortic and patulous condition of the mitral valves."

Societies and Academies

Dublin

Royal Dublin Society, April 20.

D. A. WEBB: Spectrographic analysis of marine invertebrates, with special reference to the chemical composition of their environment. Quantitative data for the occurrence of 25 elements in a variety of forms are presented, and considered in relation to the concentration in which the same elements are found in sea water. Li, B, Sr, Al and Ag can frequently be detected in organisms, but not in concentrations significantly higher than in the environment. Si, Cu, Fe, Co, Ni, V, Cr, Zn, Cd, Sn and F, can be accumulated by some species from food or water in which they are scanty or undetectable. Pb, Ba and Mn, are intermediate. Previous work on the subject is discussed, with more than a hundred references.

J. CARROLL: Potato eelworm investigations. Recent research on the potato root eelworm, *H. schachtii*, has demonstrated conclusively that the eelworm can by itself give rise to 'potato sickness' in its most severe form. It has also been established that healthy crops of potatoes can be produced on eelworm-infected soil whenever the plants make a fair amount of growth before normal hatching of eelworm eggs in the soil commences. Experiments are designed to test the usefulness of trap-cropping with potatoes for the purpose of reducing the eelworm population of the soil.

C. S. RONAYNE: A curious lightning photograph. An exposure of about two minutes with an aperture $f/6.3$ at about 11.30 p.m. B.S.T. in the month of July recorded two flashes. One was completely solarized, and appeared on the print as a thin black line, with the exception of the lower end which was white. Another neighbouring flash was not reversed and appeared white and of appreciable width. This flash showed a thin black edge and black branches. It would seem that the effect must be due to double reversal of the photographic image.

Paris

Academy of Sciences, May 3 (*C.R.*, 204, 1285-1374).

RICHARD FOSSE and ROGER DE LARAMBERGUE: The synthesis of cyanamide by the oxidation of glucose and ammonia. Cyanamide is produced by the oxidation of glucose in ammonia solution by potassium permanganate.

CHARLES ACHARD, AUGUSTIN BOUTARIC and MME. MADELEINE ROY: The optical activity of sera and their proteins separated by the acetone method in the cold. The rotations produced by sera or by the proteins separated from the sera are practically identical. From this it is concluded that the extraction by the acetone method causes no change in the proteins.

GEORGES CLAUDE: The search for aeroplanes lost at sea. Suggests the use of dyes in special containers giving a coloured area visible for about six hours.

SERGE BERNSTEIN: Quadrature formulæ with non-negative coefficients and equidistant abscissæ.

JEAN BAPTISTE SENDERENS: Researches on benzoyl chloride. Aromatic ketones.

LAUGE KOCH: The question of the Caledonian chain in northern Greenland.

PAUL VINCENSINI: A property of convex bodies of space of n dimensions.

SZOLEM MANDELBROJT: The regularization of functions.

RADU BADESCO: The cyanide method in the extraction of gold. A mathematical discussion of some problems arising in the cyanide extraction of gold ores.

RAYMOND TREMBLOT: The spectroscopic triple star 113 Hercules.

LÉON AGOSTINI: The flow of air with velocities higher than sound through holes of very small diameter. Experiments were made with holes 0.03–0.5 mm. diameter, and over this range the empirical relation of Emden was found to be verified.

LOUIS SACKMANN: The study of the flow of air in the immediate neighbourhood of a wall. Application to the study of the characteristics of aeroplane wings.

ANDRÉ LABARTHE and ALEXANDRE PONOMAREFF: The internal injection of petrol in an internal combustion motor.

D. G. DERVICHIAN and MAURICE JOLY: The viscosity of monomolecular surface layers.

PIERRE JACQUET: The value of the microscopic method for the study of electrolytic deposits. It is claimed that by using the method described the whole surface of the cathode can be explored, and this cannot be realized by the electron diffraction method.

ALEXANDRE DUFOUR and FERNAND PRUNIER: The observation of Sagnac's phenomenon with a source of light not forming part of the rotating system.

BORIS VODAR: The absorption spectrum of nitrous oxide in the liquid state.

H. OLLIVIER: Contrast between the laws of thermal variation of the magnetic rotatory power in the case of the nitrates of manganese and gadolinium on one hand and the nitrates of cerium, neodymium, praseodymium on the other.

Mlle. CATHERINE CHAMIÉ: Rapid identification by the γ -radiation of actinium, radiothorium and mesothorium.

JEAN PERREU: The heats of saturation and of hydration of sodium sulphate.

JEAN COUBNOT and Mlle. LOUISE HALM: The methods of testing by corrosion of magnesium and non-protected ultra-light alloys. A description of two methods, one based on loss of weight, the other on gas evolved, which have been proved to give satisfactory comparative results.

Mlle. JEANNE FORET: The action of soda in solution on hydrated tetracalcium aluminate.

EDOUARD RENCKER and PIERRE VALLET: The thermal decomposition of ammoniacal copper sulphates. The compound $\text{CuSO}_4 \cdot 5\text{NH}_3$ when decomposed by heat gives as intermediate products $\text{CuSO}_4 \cdot 2\text{NH}_3$, $\text{CuSO}_4 \cdot \text{NH}_3$, and finally the anhydrous CuSO_4 . The hydrated compound $\text{CuSO}_4 \cdot 4\text{NH}_3 \cdot \text{H}_2\text{O}$ gives the same intermediate products.

EMILE CARRIÈRE and HENRI GUIER: The precipitation and determination of vanadates. Study of the completeness of precipitation in solutions of varying pH by precipitation with barium chloride, silver nitrate and lead acetate.

CHRISTIAN AALL: The influence of magnesia on the working of a carbide furnace. Experiments explaining the anomalies and inconveniences resulting from the introduction of magnesia into a carbide furnace.

Mlle. FRANCE BLOCH: Contribution to the study of the thioacids. The preparation and properties of the acid $\text{C}_6\text{H}_5\text{CS.SH}$.

RENÉ HEILMANN: Isoamylidene-acetone.

ROGER PAJEAU: Beryllium bromide in some synthetical reactions. Beryllium bromide does not always give the Friedel and Crafts reaction, but can be used in certain cases.

R. TRUHAUT: The action of mercuric oxide in alkaline solution on glyocol.

PIERRE BEDOS and ADRIEN RUYER: The stable dibromide of 1,3.cyclohexadiene.

PIERRE CHATELAIN: Is the double refraction of liquid crystals independent of the action of the walls or of the action of the magnetic field?

ANDRÉ DEMAY: The connexion between the Dinantian granite, microgranite and rhyolite in the eastern part of the Guéret massif.

M. and MME. FERNAND MOREAU: The toxicity and antagonism of certain anions in cultures of *Saprolegnia*.

MAURICE MARIE JANOT: The phenomena of growth produced in plants following injections of hetero-auxin (β -indolacetic acid).

ALBERT BERTHELOT and Mlle. GERMAINE AMOUREUX: Remarks on the utilization of aseptic seedlings for the study of the formation of tumours.

FERNAND WILLAUME and OSIAS BINDER: The absorption spectra by reflection in the ultra-violet of some basic copper salts and other fungicidal and insecticidal products.

JEAN LOUIS PERROT: The activity of the spermatozooids at the level of the hermaphrodite canal of *Helix pomatia*.

MAURICE FONTAINE: The amount of flavine in various organs of the eel.

JEHAN VELLARD: Geographical variations of the poison of *Bothrops atrox*.

HENRI SIMONNET: Contribution to the study of the fate of morphine in the animal organism.

LÉOPOLD NÈGRE, ALBERT BERTHELOT and JEAN BRETEY: The action of the ethyl esters of certain saturated fatty acids on the evolution of experimental tuberculosis in the guinea pig.

Moscow

Academy of Sciences (*C.R.*, 14, No. 4; 1937).

A. ALEXANDROV: New inequalities for volumes of convex bodies.

B. GNEDENKO: Unity of a system of orthogonal functions invariant with regard to the derivation.

M. KOURENSKY: A method of integration of equations with partial functions of the first order, linear with reference to the Jacobians, and with several unknown functions.

V. S. IGNATOVSKIJ: The Laplacean transformation (4).

N. S. KOŠLJAKOV: Developments into Fourier-Bessel series.

S. MIKELADZE: (1) The numerical solution of the differential equation:

$$\frac{d^2u}{dx^2} + \frac{d^2u}{dy^2} + \frac{d^2u}{dz^2} = \Phi(x, y, z).$$

(2) The numerical integration of the Laplacean and Poisson's equations.

N. J. SELJAKOV: Nature of ordinary ice. The existence of two modifications of ice belonging to different classes of symmetry is proved.

M. KONSTANTINOVA-SCHLESINGER: Percentage of atmospheric ozone at the altitude of 9,620 m. determined by fluorometric procedure.

W. A. PLOTNIKOV: Isotopes.

E. E. BABKIN: Vapour tension of a mixture of phosphoric and nitric acids.

M. A. KLOČKO: Conductivity of electrolytic systems.

I. LOBANOV and A. JUNGERMAN: The age of old rocks at Isahkovski Hill.

T. T. DEMIDENKO and E. F. TIMOFFEIEVA: (1) *Azotobacter* as a source of nitrogenous foodstuff for the higher plants. (2) The role of straw as a source of carbohydrates for nodule bacteria.

D. KOSTOFF: (1) Interspecific hybrids in *Secale* (Rye). (2) Studies on polyploid plants (17). *Nicotiana multivalvis* ($2n = 48$) \times *Nicotiana suaveolens* ($2n = 32$) amphidiploid ($2n = 80$).

M. KLUČNIKOVA: Physiological characteristics of vernalized and non-vernalized *Perilla*.

N. I. EFIMOVA: Influence of different substances, artificially introduced into leaves of tobacco, on the development of the disease called 'riaboukha'.

A. A. KUZMENKO: Experiments on the illumination of grains by light of different wave-length.

T. T. DEMIDENKO and E. F. TIMOFFEIEVA: Influence of nodule bacteria and *Azotobacter* on the yield of leguminous and cereal plants sown together.

M. I. SALTYKOVSKIY: Causes of intermediate cold resistance in wheat hybrids of the first generation.

ASSISTANT FOR COMPUTATIONAL WORK, etc., in the Mathematics Department, Imperial College of Science and Technology, South Kensington, S.W.7.—The Secretary (June 30).

SENIOR PHYSICIST, CHEMIST AND RESEARCH ASSISTANT IN BIO-CHEMISTRY on the staff of the Wool Industries Research Association—The Secretary, Torrington, Headingley, Leeds, 6 (June 30).

LECTURER IN BIOLOGY AND SCHOOL GARDENING in the Swanley Horticultural College for Women, Swanley, Kent—The Principal (July 1).

BIOCHEMIST in the Rowett Research Institute, Aberdeen—The Secretary (July 1).

DEMONSTRATOR in the Physics Department, Guy's Hospital Medical School, London Bridge, S.E.1—The Dean (July 2).

PSYCHOLOGIST (woman: part-time) in the Maudsley Hospital, Denmark Hill, S.E.5—The Medical Superintendent (July 3).

PRINCIPAL AND HEAD MASTER of the Sheerness Technical Institute and Junior Technical School—Mr. V. C. Stupples, 46 High Street, Sheerness (July 3).

Official Publications Received

Great Britain and Ireland

Department of Scientific and Industrial Research. Report of Test by the Director of Fuel Research on the Carbonising Plant of Coal and Allied Industries, Ltd., at Seaham Harbour, County Durham—Test carried out 10th to 17th September 1936. Pp. iv+33. (London: H.M. Stationery Office.) 9s. net. [245]

Ministry of Health. Costing Returns, Year ending 31st March 1936. Part 2: Poor Law Institutions, Separate Casual Wards. Pp. 27. (London: H.M. Stationery Office.) 1s. 3d. net. [245]

Twenty-five Years of the London Museum: an Album of Photographs illustrating the Range of the Collections. Pp. 142+130 plates. (London: London Museum.) 2s. 6d. [265]

Other Countries

U.S. Department of Commerce: Coast and Geodetic Survey. Special Publication No. 205: Cartography. By Charles H. Deetz. Pp. vi+83+29 plates. (Washington, D.C.: Government Printing Office.) 60 cents. [215]

U.S. Department of the Interior: Office of Education. Bulletin, 1936, No. 19: Functional Planning of Elementary School Buildings. By Alice Barrows. Pp. viii+83. (Washington, D.C.: Government Printing Office.) 25 cents. [215]

Achema Jahrbuch, Jahrgang 1937: Berichte über Stand und Entwicklung des Chemischen Apparatewesens. Begründet von Dr. Max Buchner. Herausgegeben unter Mitwirkung von Fachgenossen aus Wissenschaft und Technik der Achema. Pp. 296+xlvi+96. (Berlin: Verlag Chemie, G.m.b.H.) [245]

U.S. Department of the Interior: Geological Survey. Bulletin 868-D: The Kaiyuh Hills, Alaska. By J. B. Mertie. (Mineral Resources of Alaska, 1934.) Pp. ii+145-178+plate 9. 10 cents. Bulletin 878: Analysis of Rocks and Minerals from the Laboratory of the United States Geological Survey, 1914-36. Tabulated by Roger C. Wells. Pp. x+134. 15 cents. Bulletin 880-A: Mineral Industry of Alaska in 1935. By Philip S. Smith. (Mineral Resources of Alaska, 1935.) Pp. ii+95+plate 1. 20 cents. Professional Paper 186-C: Fossil Plants from the Stanley Shale and Jackfork Sandstone in Southeastern Oklahoma and Western Arkansas. By David White. (Shorter Contributions to General Geology, 1936.) Pp. ii+43-67+plates 10-14. 10 cents. Professional Paper 186-D: Some Organic Constituents of a Recent Sediment from Chinoctague Bay, Virginia. By Roger C. Wells and E. Theodore Erickson. (Shorter Contributions to General Geology, 1936.) Pp. ii+69-79+plate 15. 10 cents. Professional Paper 186-G: Stratigraphic Relations of the Austin, Taylor and Equivalent Formations in Texas. By Lloyd William Stephenson. (Shorter Contributions to General Geology, 1936.) Pp. ii+133-146+plate 44. 10 cents. Professional Paper 186-I: Some Deep Wells near the Atlantic Coast in Virginia and the Carolinas. By W. C. Mansfield. (Shorter Contributions to General Geology, 1936.) Pp. ii+159-161. 5 cents. Water-Supply Paper 786: Surface Water Supply of the United States, 1935. Part 6: Missouri River Basin. Pp. 353. 40 cents. (Washington, D.C.: Government Printing Office.) [245]

Koninklijke Vereeniging "Koloniaal Instituut", Amsterdam. Zes en twintigste Jaarverslag, 1936. Pp. 135. (Amsterdam: Koloniaal Instituut.) [245]

Proceedings of the U.S. National Museum. Vol. 84, No. 3016: Two New Beetles of the Family Mordellidae from Orchids. By Eugene Ray. Pp. 239-242. (Washington, D.C.: Government Printing Office.) [245]

Catalogues, etc.

Catalogue of Books and Journals on Zoology, Biology and Geology. (No. 507.) Pp. 66. (Cambridge: W. Heffer and Sons, Ltd.)

A Collection of Old Medical Books: Bacteriology, Circulation of the Blood, Electrotherapy, Ophthalmology, Pharmacology, etc. (List No. 25.) Pp. 36. (London: E. P. Goldschmidt and Co., Ltd.)

Scientific Instruments. Pp. 100. (Delft: P. J. Kipp and Zonen; London: W. Edwards and Co.)

Vergleichende Anatomie: Histologie, Ontogenie, Anthropologie. (Antiquariatskatalog Nr. 712.) Pp. 202. (Leipzig: Gustav Fock, G.m.b.H.)

Cambridge Pressure and Draught Indicators and Recorders. (Folder No. 47a.) Pp. 6. (London: Cambridge Instrument Co., Ltd.)

Forthcoming Events

Tuesday, June 22

INSTITUTION OF HEATING AND VENTILATING ENGINEERS, at 7.—A. F. Dufton: "The Air we Breathe".

Thursday, June 24

LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE, at 5.30. Oration Day.

Sir William Beveridge: "The Place of the Social Sciences in Human Knowledge".

Saturday, June 26

ROYAL METEOROLOGICAL SOCIETY.—Summer meeting to be held at the Solar Physics Observatory, Cambridge.

ASSOCIATION OF TECHNICAL INSTITUTIONS, June 25-26.—Annual Summer Meeting to be held at Blackpool.

Appointments Vacant

APPLICATIONS are invited for the following appointments, on or before the dates mentioned:

LECTURER IN MECHANICAL ENGINEERING in the Hull Municipal Technical College—The Director of Education, Education Offices, Guildhall, Hull (June 21).

HEAD of the Department of Hygiene and Public Health in the Battersea Polytechnic, S.W.11—The Principal (June 26).

LECTURER IN GEOGRAPHY in the Portsmouth Municipal Technical College—The Registrar (June 26).

LECTURER IN CHEMISTRY in the Battersea Polytechnic, London, S.W.11—The Principal (June 26).

LECTURER IN PHYSICS AND METHODS OF TEACHING SCIENCE in the Borough Road College, Isleworth, Middlesex—The Principal (June 26).

ASSISTANT MASTERS TO TEACH ENGINEERING AND SCIENCE AND MATHEMATICS in the Bolton Municipal Technical College—The Director of Education, Education Offices, Nelson Square, Bolton (June 30).

LECTURER IN PRODUCTION ENGINEERING and LECTURER IN ELECTRICAL ENGINEERING in the Central Technical College, Birmingham—The Principal (June 30).