Science News a Century Ago

London and Birmingham Railway

THE most important event in railway history in 1838 was the opening on September 17, 1838, of the whole length of line, 112½ miles long, from London to Birmingham. Parts of the line had been in use for some time, but at 7 a.m. on that day a train left Euston carrying the directors, the principal engineers and a few friends, Robert Stephenson, the engineer-in-chief, being in charge of the locomotive. The new portion opened on September 17 was that between Denbigh Hall and Rugby, on which is situated the Kilsby Tunnel, 2,400 yards long, which had proved most difficult to construct. Describing the opening, a correspondent of *The Times* said, "Taking this line of road as a whole, it is one of the most stupendous undertakings of modern times, and will ultimately lead to results of which it is difficult to foretell the extent."

J. D. Forbes and His Students

FORBES, when professor of natural philosophy at Edinburgh, had among his students during the session 1836–37, "Batten, Cleghorn, J. Anderson, J. Rankine, Harrison—the pleasantest I ever had, much occupied with experiments on radiant heat". He kept in touch with some of these and writing on September 17, 1838, to J. T. Harrison, who became a civil engineer under Brunel, he said: "There has been a considerable break up, of course, among your associates in the Nat. Phil. Class. Still, however, I have kept my eye pretty well upon those with whom you were more particularly associated and the Physico-Mathematical Society prospered last winter remarkably well. . . .

"I shall be glad to hear, though I scarcely expect it, that you have not in the midst of your professional pursuits entirely lost sight of the general scientific principles which form its surest foundation. I do not doubt your good-will or the clearness of your views of what befits a liberal and enlightened prosecution of your profession. That I am sure you will never do; but I rather fear that the very success to which your talents and application so well entitle you, may have already forced you to travel upon the narrow railroad of everyday applications. . . ."

The Duke of Sussex and the Royal Society

IN 1830 Prince Frederick Augustus, Duke of Sussex (1773–1843), had accepted the presidency of the Royal Society. He took office just after Babbage had published his "Reflections on the Decline of Science in England" and Sir James South had written his "Charges against the President and Council of the Royal Society". The Duke was elected by 119 votes as against 111 cast for Sir John Herschel. He held office for eight years, and when he decided to resign he wrote a letter to the Council which was published in the *Athenæum* for September 22, 1838. In the course of this letter he said: "I hope and most fervently pray that the Royal Society may long continue to prosper and flourish, but for this purpose, Gentlemen, you must avoid all matters which are of a tendency to create angry feelings, or heart burnings, on questions of a religious or a political nature. They have nothing to do with science but to create difficulties and impede philosophical researches. From these let me conjure you most cautiously to abstain."

Societies and Academies

Paris

Academy of Sciences (*C.R.*, **207**, 197–264, July 18, 1938).

E. BOREL: The game *pari mutuel*. A study from the point of view of probabilities.

L. CAYEUX: Existence of a coarse calcareous sand at the base of the Senonian phosphatic chalk of Picardy.

J. DE LAPPARENT and R. HOCART: Mineralogical nature of the aluminium hydroxides in the bauxite of French West Africa.

H. DELANGE: Series of polynomials of which the zeros have a regular distribution.

F. GANTMACHER: Canonical representation of isomorphic substitutions of a semi-simple complex Lie group.

A. DENJOY: Convergence of trigonometric series.

L. CHADENSON: A completely relativistic wave mechanics.

L. AUGER: Tuning reed pipes considered as a phenomenon of relaxation.

E. BADAREU and L. CONSTANTINESCO: The explosive potential in benzene vapour.

MME. I. MIHUL and C. MIHUL: Mixed reflection in media with variable optical indexes; application to the ionosphere.

M. DÉRIBÉRÉ: Highly persistent fluorescence in a group of natural limestones.

E. CANALS and P. PEYROT: Raman spectra of crystalline powders: hydrates.

J. THIBAUD and P. COMPARAT: Distribution of resonance levels during the excitation of nitrogen by fast neutrons.

P. AUGER and R. MAZE: Large atmospheric cosmic ray showers. Particles with a maximum range of 15 cm. of lead were detected.

B. PONTECORVO: Order of magnitude of the probabilities of radiative transition in the nucleus.

W. BRONIEWSKI, S. JELNICKI and M. SKWARA: Solidification diagram of copper-aluminium alloys.

G. CHAUDRON, A. PORTEVIN and L. MOREAU: Some consequences of the process of degassing metals at ordinary temperature.

A. CHRÉTIEN and J. BISCH: Active aluminium obtained by igneous electrolysis. A mixture of aluminium bromide and potassium bromide under pressure at 500°, using aluminium as anode and mercury as cathode, yields an active form of aluminium at the cathode.

P. GRAMMATICAKIS: Action of organomagnesium mixtures on the *N*-acyl-*N'*-phenyl-hydrazines.

R. JACQUEMAIN and MLLE. G. DEVILLERS: Some propanetriol aminobenzoic ethers.

L. MARTINEAU and J. WIEMANN: Isolation of an intermediate product in the catalytic isomerization of dipropenylglycol.

P. MARIE and A. MILLARDET: The microscopic fauna of the sediments of the Cape Breton deep.

T. SOLACOLU, D. CONSTANTINESCO and MME. M. CONSTANTINESCO: Anatomical and cytological study [in *Vicia Faba* L.] of the modifications produced and by a mixture of an organo-formative substance and colchicine. While colchicine produces nuclear effects only, a mixture of colchicine and β-indolyl-propionic acid produces tumours showing an upper zone with colchicine effects and a lower zone with exaggerated development of meristem.

MME. L. LAVIER-GEORGE: Floral anomalies of *Laburnum vulgare* Grieseb.

R.-G. WERNER: Bryology and phytogeography.

MME. S. BELLUC, J. CHAUSSIN, H. LAUGIER and MME. T. RANSON: Study of the influence of wine on the elimination of urine.

J. ROCHE, MLLE. A. FILIPPI and M. MOURGUE: General reactions of the skeleton following fracture of a bone. All bones of the skeleton show a big increase of phosphatasic activity after fracture of any one of them.

R. DULSICOUËT and R. HERPIN: Experimental researches on the bacterial membrane which develops on the paints of ships' bottoms: its role in corrosion.

R. HIRSCH: Therapeutic results obtained by the slow intravenous injection of acidified physiological sera (*p*H 4·5–5). Such sera are powerfully analgesic and also anti-hæmorrhagic.

M. LANGERON: Anopheles of the Grand Atlas and of the Moroccan Anti-Atlas.

Rome

National Academy of the Lincei (*Atti*, 27, 37–144; 1938).

E. BOMPIANI: Anholonomous varieties. Some general theorems (1). The V_3^2 varieties of the projective element S_3 (2).

F. SEVERI: Concerning the theory of equivalent series on reducible curves.

O. SCARPA and C. ROSSI: Volta effect in solid metallic alloys (2).

C. P. BOGDAN: Concerning a class of V_3 varieties which admit of an infinity of quasi-asymptotic surfaces depending on an arbitrary function.

N. CARTOVITCH: Effective calculation of the period of perturbed motion in a typical case of first approximation.

G. GHERARDELLI: An observation on equivalent series on a reducible algebraic curve.

I. POPA: Observations on the parabolic line of a surface.

G. COLONNETTI: The second principle of reciprocity and its applications to the calculation of permanent deformations (1).

L. SONA: Some rigid configurations of vortex filaments perpendicular to one plane (1).

O. ZANABONI: Relations between internal action and deformations in envelopes with double curvature.

P. GUARESCHI: (1) Compressibility coefficient of solids. (2) Coefficient of thermal conductivity of gases.

G. GIACOMELLO: Structure of choleic acids determined by means of Patterson's analysis.

R. SIGNORINI: The fold of the Lagoni and Libro Aperto mountains in the Modenese Apennines.

P. PRINCIPI: The origin of some white earths from the Valle del Nestore (Umbria).

G. NEGODI: Cariology of the genera *Aposeris* and *Hyoseris* (Compositæ-Cichorieæ tribus Cichorinæ).

A. CORRADETTI: Some phases of the schizogonic cycle of *Plasmodium gallinaceum* and of *Plasmodium cathemerium*.

E. FULCHIGNONI: Reflex experimental epilepsy excited by light stimuli.

G. MARTINO and E. FULCHIGNONI: Phenomenon of facilitation in reflex epilepsy caused by occipital strychninization under the action of conditioned light stimuli.

V. ZAGAMI: Action of the vagi in the metabolism of glycides. (1) Behaviour of hepatic, cardiac and muscular glycogen following bilateral vagotomy in pigeons.

Forthcoming Events

INTERNATIONAL FEDERATION FOR DOCUMENTATION, September 21–26.—Fourteenth Conference, to be held at Lady Margaret Hall, Oxford (Sept. 21–25) and Science Museum, London, S.W.7 (Sept. 26).

September 21.—Sir William Bragg, F.R.S.: "The Historical Papers at the Royal Institution" (Presidential Address).

ASSOCIATION OF SPECIAL LIBRARIES AND INFORMATION BUREAUX, September 23–26.—Fifteenth Annual Conference, to be held at Lady Margaret Hall, Oxford. Joint sessions with the International Federation for Documentation on September 24 and 25.

Sir William Beveridge: "The Use of Books in Social Science" (Presidential Address).

Appointments Vacant

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

JUNIOR SCIENTIFIC OFFICER (PHYSICIST) at the Fuel Research Station, East Greenwich—The Establishment Officer, Department of Scientific and Industrial Research, 16 Old Queen Street, Westminster, London, S.W.1, by postcard quoting "J. 38/11" (September 20).

LECTURER in the DEPARTMENT OF MECHANICAL ENGINEERING, lecturer in BUILDING AND ALLIED SUBJECTS and lecturer in BUILDING SCIENCE in the Central Technical College, Suffolk Street, Birmingham, 1—The Principal (September 20).

LECTURER IN PHILOSOPHY in the United College, St. Andrews—The Secretary and Registrar (September 24).

A FIELD OFFICER and an ASSISTANT SOIL ANALYST under the Advisory Chemist, Department of Agriculture, University of Cambridge—The Secretary, School of Agriculture, Cambridge (September 24).

ASSISTANT ENGINEER in the Punjab Service of Engineers, Class II (Irrigation Branch)—The High Commissioner for India, General Department, India House, Aldwych, London, W.C.2, by postcard (September 26).

LECTURER IN CHEMISTRY in the Sir John Cass Technical Institute, Jewry Street, Aldgate, London, E.C.3—The Principal (September 26).

A POST (AERIAL GUNNERY) in the Directorate of Armament Development, Air Ministry Headquarters, London—The Under-Secretary of State, Air Ministry (S.2.D.), Adastral House, Kingsway, London, W.C.2, quoting ref. *B*.94 (September 30).

TECHNICAL OFFICERS (*B*.59, design, development and manufacture of high explosive; *B*.92, metals and stresses; *B*.91, electrical and hydraulic engineering) at Air Ministry Headquarters, London—The Under-Secretary of State, Air Ministry (S.2.D.), Adastral House, Kingsway, London, W.C.2, quoting appropriate reference number (September 30).

TECHNICAL OFFICERS (AIRCRAFT, *B*.70) and TECHNICAL OFFICERS (ENGINES, *B*.88) and ASSISTANTS II to these officers (*B*.89 and *B*.90), at Air Ministry Headquarters, London—The Under-Secretary of State, Air Ministry (S.2.D.), Adastral House, Kingsway, London, W.C.2, quoting appropriate reference (September 30).

ASSISTANT ENGINEER for the Drainage and Irrigation Department, Malaya (M/5765), and ASSISTANT ENGINEER for the Malayan Public Works Service (M/5731)—The Crown Agents for the Colonies, 4 Millbank, London, S.W.1, quoting appropriate reference number.

CIVIL ENGINEER for service with the Sudan Irrigation Department—The Controller, Sudan Government London Office, Wellington House, Buckingham Gate, London, S.W.1, envelope marked "Engineer".

Reports and other Publications

(not included in the monthly Books Supplement)

Other Countries

Ministry of Agriculture, Egypt: Technical and Scientific Service. Bulletin No. 190: Watermelon Anthracnose. By Dr. Amin Fikry. Pp. ii+21+10 plates. (Cairo: Government Press.) P.T. 4. [298

Indian Forest Records (New Series). Silviculture, Vol. 3, No. 1: An Investigation into the Best Root Length of Stump to use when Stump Planting Teak (*Tectona grandis*) in Areas having a General West Coast Type of Climate. By A. L. Griffith. Pp. ii+16. (Delhi: Manager of Publications.) 8 annas; 10*d*. [298

Imperial College of Tropical Agriculture. Seventh Annual Report on Cacao Research, 1937. Pp. 51. (Trinidad: Government Printing Office.) 5*s*. [308

U.S. Department of the Interior: Office of Education. Bulletin, 1937, No. 19: CCC Camp Education; Guidance and Recreational Phases. By Howard W. Oxley. (Project in Research in Universities.) Pp. vi+23. (Washington, D.C.: Government Printing Office.) 10 cents. [19

Proceedings of the United States National Museum. Vol. 85, No. 3039: The Cuban Operculate Land Shells of the Subfamily Chondropominæ. By Carlos de la Torre and Paul Bartsch. Pp. 193–423+plates 7–39. (Washington, D.C.: Government Printing Office.) [19