

Scott Russell's Steam Carriage

John Scott Russell (1808–82), the famous naval architect and shipbuilder, who with Brunel constructed the *Great Eastern*, was a student at the Universities of Glasgow, St. Andrews and Edinburgh, and when Sir John Leslie, professor of natural philosophy at Edinburgh, died in 1832, he was selected to fill his place temporarily. About this time he turned his attention to steam vehicles and on July 2, 1834, took out a patent. That year no fewer than six of his carriages were at work in Scotland. The subject, however, was not pursued and he then turned his attention to the study of waves and the resistance and construction of ships, for which he is remembered to-day.

Prof. Hausmann of Göttingen

On July 5, 1834, Prof. Johann Friedrich Hausmann, the German mineralogist and geologist who occupied a chair at Göttingen, sent a letter to the editor of the *Philosophical Magazine* disclaiming a statement that he had been a pupil of Mohs, whom indeed he did not know, though he esteemed him highly. Hausmann, who was born in Hanover in 1782, studied at Brunswick under Knoch and then at Göttingen under Blumenbach. From 1803 until 1806 he was engaged in the mines of Brunswick, in 1809 was inspector-general of mines in Westphalia, and was appointed to the chair at Göttingen in 1811. He made many excursions into Sweden, Norway, France, Holland and England and wrote many works. "Already in 1803, and therefore earlier than Mohs," he said in his letter, "I became a mineralogical writer, building my system on peculiar views belonging to no other school. I was the first who appeared as opponent to Werner; assisted in the spreading of Haly's theory; and published my first system in 1809, founded on chemical composition and external character. I gave in 1813 a complete *Handbuch on Mineralogy*. . . ."

Newton's House

The *Mechanics' Magazine* of July 5, 1834, contained the following note: "We are glad to observe from the newspapers that Mr. Thomas Steele has revived his laudable project for preserving the house and observatory of the illustrious Newton [in St. Martin's Street, Leicester Square] by enclosing it in a monumental building with a lofty dome—in the same manner as the primitive chapel founded by St. Francis, at Assisi in Italy, is enclosed by the great Franciscan church of more modern times." Steele's project never came to anything; the house stood until 1913, and its site is now occupied by a fine building, the Westminster Public Library, on which is a tablet referring to Newton.

Sir Gilbert Blanc, F.R.S.

A correspondent has pointed out, in connexion with the paragraph under this title in *NATURE* of June 23, p. 957, that Sir Gilbert Blanc established in 1830, with the sanction of the Admiralty, a fund for the "encouragement of Naval Medical Science". This fund, which is vested in the Royal College of Surgeons, is employed for providing an annual Gold Medal for the medical officer who obtains the highest place in the examination for promotion to Surgeon Commander.

Societies and Academies

LONDON

Royal Society, June 21. P. D. F. MURRAY: Unco-ordinated contractions caused by egg-white and by alterations in the cation ratio of the medium, in the heart of the chick embryo *in vitro*. If suitable fragments of chick embryos in primitive streak stages be explanted into the egg-white of four- or five-day eggs there occurs a differentiation of contracting cardiac tissue. The contractions differ from those seen in similar explants in plasma in lacking co-ordination, each cell contracting independently of the others. When entire hearts of 2½-day embryos are similarly explanted into egg-white, the co-ordinate beat always stops, and is usually replaced by unco-ordinated contractions. This anarchic activity is given the provisional name of 'twitter'. It is caused by the high potassium content, aided by the lower, but still rather high calcium content, and by the low content of sodium. K. MELLANBY: The site of loss of water from insects. An apparatus is described which will measure the amount of water evaporated from an insect, and is accurate to a hundredth of a milligram. The rate of loss of water from three species of insects was determined: (1) in dry air, (2) in air to which 5 per cent of carbon dioxide had been added, and (3) in a mixture containing less than 1 per cent of oxygen. In insects with a spiracle-closing mechanism the rate of loss of water under (1) and (2) (which caused them to keep their spiracles open permanently) was 2–7 times that in dry air. In insects which could not close their spiracles, the rate of loss of water was practically the same under all conditions. 2 per cent carbon dioxide is sufficient to cause insects to keep their spiracles permanently open; oxygen has to be reduced below 1 per cent to have the same effect. From these experiments it appears that practically all the water evaporated is lost by way of the tracheal system, and that a thin integument may be just as watertight as one which is highly 'sclerotised'. P. A. BUXTON and D. J. LEWIS: Climate and tsetse flies: laboratory studies upon *Glossina submorsitans* and *tachinoides*. It is already known that the number of tsetse flies which can be captured under standard conditions rises and falls with the season, and that many of the species are sharply limited to particular types of vegetation. It is thought that the limits are climatic. Observations made under controlled conditions in the laboratory support those made in the field; taken together, the results should tend to give precision to the control of *Glossina*, which will probably be achieved by altering the vegetation and with it the micro-climate.

PARIS

Academy of Sciences, May 7 (*C.R.*, 198, 1645–1728). A. COTTON and TSAI BELLING: The use, with the large Bellevue electromagnet, of a supplementary coil for experiments in magneto-optics where the pencil is normal to the lines of force. Details of construction and measurements of the fields obtained. C. MATIGNON and M. SÉON: The preparation of ethylene and its homologues by cracking heptane in the presence of steam. Heptane and steam, heated to about 900° C., give gas mixtures rich in ethylene and its higher homologues: practically no carbon monoxide is formed. E. L. BOUVIER: New considerations on the African saturnites. JEAN BAPTISTE

SENDERENS: The action of sulphuric acid, cold or at a moderate temperature, on aromatic acids and esters. Aromatic acids in which the carboxyl group is directly united to the nucleus are not sulphonated either at the ordinary temperature or at 80° C. Aromatic acids of the type of phenylacetic acid give sulphonic acids in the cold and at 80° C. LUCIEN DANIEL: The action of repeated grafting carried out on the descendants of absinth grafted on *Chrysanthemum frutescens*. PAUL LÉVY: Complement to the study of the *V* and *W* spaces. O. LOVETT: Certain skew curves generalising conics. M. SYPTÁK: The hyper-circumferences and hyperhelices generalised in Euclidian spaces of *p* dimensions. AL. PANTAZI: Conjugated stratifiable quadruples. P. THULLEN: The essential singularities of analytical functions of several complex variables. N. LUSIN: The decomposition of ensembles. J. BERNAMONT and M. LÉVY: The properties of mountings with counter-reaction. Mlle. M. QUINTIN: The influence of gases on the unilateral conductivity of the silicon-carbon couple. The nature and pressure of the gas exert an influence on the electromotive force of silicon-carbon rectifiers. MME. LINA GUASTALLA: The process of oxidation-reduction at the level of a membrane interposed in a cupric solution in the course of electrolysis. N. THON: The nature of electrode capacity in alternating current. AUGUSTE PICCARD: The constitution of cosmic rays. A discussion of the corpuscular and electromagnetic theories of cosmic rays, and an attempt to reconcile the two views. A. NAHERNIAC: The study of a characteristic band of the OH function in the near infra-red (about 0.96 μ). A comparison of the bands produced in the liquid and vapour states, and of the differences between the bands for primary, secondary and tertiary alcohols. MAURICE CURIE and S. TAKVORIAN: The fractionation of actinium in the presence of rare earths. GEORGES FOURETIER: The measurement of the concentrations during the photographic recording of chemical reactions. HENRI MOUREU and PAUL ROCQUET: The transformation of phosphorus pentanitride into phosphorus mononitride. The nitride P₃N₅, heated in a vacuum at 700° C., gives off one molecule of nitrogen leaving the nitride PN. MME. P. RUMFF: The formation of perchromates in solution. The view of Schwarz and Giese, that the blue perchromate corresponds to the formation of the peranhydride CrO₆, is confirmed by a physico-chemical method. PIERRE SÛE: Study of the action of sodium carbonate on niobium pentoxide. G. DUPONT, W. ZACHAREWICZ and R. DULOU: The synthesis of myrtenol and myrtenal. Mlle. VERA PARASKOVA: The action of ethylmagnesium bromide on sebacic bis-diethylamide. Mlle. M. VEILER: An abnormal reaction of hypochlorous acid on dimethylpentenol. A. LEPAPE, L. MORET and G. SCHNEIDER: The mineralisation of the thermal waters of Aix-les-Bains (Savoy), and its geological signification. Study of the helium-argon ratio in the gases from nine springs. From the data given it is impossible that the hot springs of Aix-les-Bains could have acquired their mineral content from Triassic strata. ARMAND KREMPF: The maregraphic inscription of the cycles of retrogradation of the nodes of the moon by certain reef-making corals. PAUL CHAUCHARD: Some physicochemical characteristics of the water of the bay of Villefranche. JEAN LUGEON: Polar atmospherics. C. L. ALEXANIAN: The establishment of the chart of anomalies of the vertical component of the earth's magnetic field in

the Vosges. MME. ELISABETH DAVID-SYLVAIN: The large Foraminifera of the Visso (Central Apennines) synclinal. W. DRABOVITCH and A. and B. CHAUCHARD: Conditioned reflexes and chronaxy. E. FISCHER-PIETTE: The vertical distribution of the organisms fixed in the zone of fluctuations of the sea. JELLINEK: The rôle of the structure of the tissues in their heating by short waves. A. and R. SARTORY, J. MEYER and J. CUENI: The lipido-protein equilibrium in the serum of patients attacked by skin affections or lipemic troubles.

LENINGRAD

Academy of Sciences (*Comptes rendus*, No. 6). I. VINOGRADOV: New theorems on the distribution of quadratic residues. A. N. KOLMOGOROV: Convergence of series of orthogonal polynomes. S. G. MICHLIN: Reduction of fundamental problems of the theory of elasticity to an integral equation of Fredholm. V. GOGOLADZE: The general problem of the integration of a generalised wave equation with variable coefficients. G. K. PUTKOV: A proof of the principal property of the canonical distribution for any given aggregate. S. ROGINSKIJ and A. SHECHTER: The recombination of oxygen and hydrogen atoms on metallic surfaces. The process of recombination includes a stage involving an energy of activation of 2,000 cal.; some of the experimental results disagree with the Bonhöffer series. At temperatures of 700° C., practically every atom that strikes a platinum or palladium filament recombines and gives its energy to the filament; the heating of filaments can, therefore, be used for absolute measurements of the concentration of atoms. I. KNUNJANZ, G. CHELINZEV and E. OSETOVA: A new synthesis of acetopropyl alcohol. An easy method was found in the reaction of ethylene oxide with the sodium salt of aceto-acetic ester in a solution of absolute alcohol. N. DEMJANOV and A. IVANOV: The action of N₂O₃ on allene and on dimethylbutadiene (diisopropenyl). Both substances with N₂O₃ in ether solution produce nitrosites of the composition C₃H₄N₂O₃ and C₆H₁₀N₂O₃, from which a diamine of dimethylbutadiene, C₆H₁₂(NH₂)₂ was obtained. I. N. NAZAROV: On the metall ketyls of the aliphatic-aromatic series. The α -branched alkyls, particularly the tertiary ones, are able to increase the dissociation, and this ability depends on the degree of their branching and the molecular weight. P. BUDNIKOV: The reduction of sodium sulphate to sodium sulphide. B. MOROZOV: The stimulating action of embryonic extracts and of tissues on regeneration in Amphibia. Both the regeneration of the dorsal fin and the general growth of tadpoles and axolotls was very strongly stimulated by feeding them with powdered human embryo, one and a half or two months old. B. BARCINSKIJ: On the germination of the seeds of *Orobanche cumana*. The seeds can germinate in distilled water, but the process is greatly stimulated by the cellular content of the root of the host plant (sunflower). The introduction of an extract from the roots into the soil induces the seeds of the parasite to germinate, so that this may be used as a method of control. V. POSPELOV: Imaginal diapause and sterility of butterflies. A symbiotic fungus *Endomyces*, living in the fat body of certain moths and accumulating reserve products, can, under certain conditions, attain parasitic status and prevent the development of the ovaries. S. CHERNOV: On the systematics and distribution of *Agkistrodon* (Ophidia) in the Soviet Union. Diagnoses and notes on the distribution of four sub-species of *A. halys*, Pall., and

of *A. blomhoffii ussuriensis*, Emel. E. P. SLASTENENKO: A new blennoid fish, *Blennius knipowitschi*, sp.n., from the Black Sea.

ROME

Royal National Academy of the Lincei, November 19. S. PINCHERLE: Linear operators and factorial coefficients. U. CISOTTI: Differential deductions from the definition of reciprocal vectors: geometrical applications (3). A. BEMPORAD: Stellar currents about R. A. 16^h + 52° Decl. Q. MAJORANA: Experiments on metallic photo-resistance at high frequency. Further experiments confirm the view that light exerts a direct action on the electrical resistance of metallic laminae. This action is not manifested in its entirety with the promptitude characteristic of the classical photoelectric phenomenon, there being a difference in phase between the light and the resistance which is sometimes less than is required by the theory of the propagation of heat. G. ASCOLI: Conditions for the validity of Taylor's abbreviated formula. E. FUBINI GHIRON: A unicity theorem for the equation

$$\frac{d^4u}{dx^4} + \frac{d^2u}{dx^2} + \frac{d^2u}{dt^2} = 0.$$

B. SEGRE: Geometric-functional determination of groups of covariant points, relative to a linear system α^3 of curves on an algebraic surface. NATALIE REIN: Qualitative characteristics in the restricted problem of three bodies in a gravitating medium. A. COLACEVICH: The orbit of the spectroscopic double τ Persei. A new orbit, appreciably different from that calculated from the Lick Observatory observations alone, is now calculated from all the observational data available. F. P. MAZZA and C. ZUMMO: The liver dehydrogenase of the higher fatty acids (2). Addition of a fatty acid, either saturated (stearic) or unsaturated (oleic), increases the consumption of oxygen by the liver by 85 or 82 per cent. The two acids are thus oxidised equally well by the liver, which must, therefore, contain a complex system effecting the oxidation. Of this system, the dehydrogenase recently described by Mazza and Stolfi forms one of the components, namely, that which passes into the aqueous liver extract and is most persistent. G. R. LEVI and M. TABET: X-ray examination of electrolytic silver deposits. With bright electrolytic silver deposits obtained from silver bromide in baths rich in sodium thiosulphate, the form of the particles is, with a high degree of approximation, isodiometric. Such deposits are, therefore, widely different from those of chromium, in which the brilliancy of the deposits is connected with the flatness of the granules. With the silver deposits, the direction of growth is perpendicular to the octahedral face.

Forthcoming Events

Friday, July 6

GEOLOGISTS' ASSOCIATION, at 7.30.—(in the Architectural Theatre, University College, Gower Street, W.C.1).—Sir Arthur Smith Woodward: "Some Recent Studies of Fossil Vertebrate Animals in North America".

MUSEUMS ASSOCIATION, July 2-6. Annual Conference to be held at Bristol.

Dr. Cyril Fox: Presidential Address.

Discussion: "Folk Museums", to be opened by Dr. R. E. M. Wheeler.

Dr. F. J. North: "Maps in the Museum".

Dr. A. E. Trueman: "Science and the Public Museum".

INTERNATIONAL ORNITHOLOGICAL CONGRESS, July 2-7. To be held at Oxford.

FOURTH INTERNATIONAL CONGRESS FOR APPLIED MECHANICS, July 3-9. To be held at Cambridge.

Official Publications Received

GREAT BRITAIN AND IRELAND

Society of Dyers and Colourists. The Jubilee Issue of the Journal of the Society of Dyers and Colourists, 1884-1934. Edited by Dr. F. M. Rowe and E. Clayton. Pp. xii+228+xxxv. (Bradford.) To Junior Members, 5s.; Members, 12s. 6d.; non-Members, 25s.

Air Ministry: Aeronautical Research Committee: Reports and Memoranda. No. 1570 (I.C.E. 884, 951): Comparative Engine Tests with Petrol and Butane. By P. H. Stokes and F. G. Code Holland. Pp. 66+28 plates. 4s. net. No. 1578 (Spin. 159 and 175): Modern Spinning Tests of an Interceptor Fighter. By A. V. Stephens and R. H. Francis. Pp. 17+2 plates. 1s. net. No. 1579 (T. 3456): Continuous Rotation Balance for Measurement of Yawing and Rolling Moments in a Spin. By P. H. Allwork. Pp. 6+3 plates. 9d. net. (London: H.M. Stationery Office.)

The National Physical Laboratory: Metrology Department. Tests on Volumetric Glassware. Pp. 34. (Teddington: National Physical Laboratory.) Free.

OTHER COUNTRIES

Commonwealth of Australia: Council for Scientific and Industrial Research. Bulletin No. 79: The "Lucerne Flea" *Smygdurus viridis* L. (Collembola) in Australia. By Dr. J. Davidson. Pp. 66+5 plates. (Melbourne: Government Printer.)

Ontario Research Foundation. Report for the Year 1933. Pp. 33. (Toronto: King's Printer.)

Contribution from the Department of Botany, University of Nebraska. No. 82: The Prairie. By J. E. Weaver and P. J. Fitzpatrick. (Reprinted from Ecological Monographs, 4, April.) Pp. 109-295. (Lincoln, Nebr.: University of Nebraska.)

Allahabad University Studies. Vol. 10 (Arts and Science). Pp. iv+375+3 plates. (Allahabad: The University.) 7.8 rupees.

Education, India. Progress of Education in India, 1927-32. By Sir George Anderson. (Tenth Quinquennial Review, Vol. 1.) Pp. iv+273. (Delhi: Manager of Publications.) 2.14 rupees; 5s.

Koninklijk Nederlandsch Meteorologisch Instituut. No. 102: Mededeelingen en Verhandelingen. 35: Oppervlaktetemperatuur in het Noordwestelijk gedeelte van den Atlantischen Oceaan (Surface Temperature in the Northwestern Part of the Atlantic Ocean). By P. M. van Riel. Pp. 92+8 plates. 1.70 fl. No. 106a: Ergebnisse Aerologischer Beobachtungen, 21, 1932. Pp. iv+38+4 plates. 1.50 fl. No. 106b: Ergebnisse Aerologischer Beobachtungen, 21a: Aerologische Beobachtungen und Terminbeobachtungen in Reykjavik während des Internationalen Polarjahres, 1932-1933. Pp. xiii+27+8 plates. 1.50 fl. No. 108: Seismische Registrierungen in De Bilt, 19, 1931. Pp. viii+52. 0.70 fl. ('s Gravenhage: Algemeene Landsdrukkerij.)

Annuaire de l'Académie Royale de Belgique, 1934-C. Pp. 264+3 plates. (Bruxelles: Maurice Lamertin.)

Canada: Department of Mines: Mines Branch. Investigations in Ore Dressing and Metallurgy (Testing and Research Laboratories) 1932. (No. 736.) Pp. iv+287+2 plates. (Ottawa: King's Printer.)

Canada: Department of Mines: Geological Survey. Mémoire 171: Geology and Ore Deposits of Copper Mountain, British Columbia. By V. Dolmage. (No. 2344.) Pp. ii+69. 25 cents. Summary Report 1933, Part A. (No. 2350.) Pp. 82. 25 cents. Summary Report 1933, Part C. (No. 2347.) Pp. 44. 25 cents. (Ottawa: King's Printer.)

Mémoires du Musée Royal d'Histoire Naturelle de Belgique. Mémoire No. 50: Bryozoaires oligocènes de la Belgique conservés au Musée Royal d'Histoire Naturelle de Belgique. Par F. Canu et R. S. Bassler. Pp. 26+4 plates. Mémoire No. 51: La faune des grès et schistes de Solières (Siegenien Moyen). Par Eug. Mailleux. Pp. 90+2 plates. Mémoire No. 56: Revision du genre Mallomonas Perty (1851) incl. pseudo-Mallomonas Chodat (1920). Par Dr. W. Conrad. Pp. 82. Mémoire No. 57: Les neuroptéridées des bassins Houilliers Belges (Première partie). Par F. Stockmans. Pp. 62+16 plates. Mémoire No. 58: The Freelifving Marine Nemas of the Belgian Coast, 2, with General Remarks on the Structure and the System of Nemas. By L. A. De Coninck and J. H. Schuurmans Stekhoven, Jr. Pp. 163. (Bruxelles.)

University of California Publications in American Archaeology and Ethnology. Vol. 35, Nos. 1 and 2: Yurok Marriages, by T. T. Waterman and A. L. Kroeber; Yurok and neighbouring Kin Term Systems, by A. L. Kroeber. Pp. 22. (Berkeley, Calif.: University of California Press; London: Cambridge University Press.) 25 cents.

CATALOGUES

The Beck Projectograph. Pp. 12. (London: R. and J. Beck, Ltd.) New and Secondhand Books on History throughout the Ages. (Catalogue No. 572.) Pp. 80. (London: Francis Edwards, Ltd.)

A Dangerous Temperature. Pp. 4. Keep it Running. Pp. 4. (London: Sternol, Ltd.)

Scientific Apparatus: Laboratory Equipment and Apparatus for Mensuration, Mechanics, Sound, Heat, Light, Electricity, Microscopy, Technical Testing, Chemistry, New and Improved Apparatus in the Microid Physical Series, Griffex A.R. Chemicals, Technical Books. (Catalogue No. 50L.) Pp. viii+954. (London: Griffin and Tatlock, Ltd.)