

## Contemporary Birthdays.

- November 20, 1851. Prof. John Merle Coulter.  
 November 21, 1866. Sir John Carruthers Beattie.  
 November 22, 1868. Sir Thomas H. Holland,  
 K.C.S.I., K.C.I.E., F.R.S.  
 November 22, 1875. Prof. L. N. G. Filon, F.R.S.  
 November 23, 1864. Dr. P. Chalmers Mitchell,  
 F.R.S.  
 November 26, 1851. Prof. J. Cossar Ewart, F.R.S.

Prof. COULTER, botanist, was born at Ningpo, China, and he was educated at Hanover College, U.S.A. Early in his career, when only twenty-one years of age, he was botanist with the United States Geological Survey in expedition work in the Rocky Mountains. Afterwards he returned to his old college, becoming professor of natural sciences; next he accepted the chair of biology in Wabash College. President, and professor of botany in Indiana University from 1891 until 1893, he has been, since 1896, professor and head of the department of botany in the University of Chicago. He is a member of the National Academy of Sciences, Washington and of the National Research Council; and a foreign member of the Linnean Society of London.

Sir J. C. BEATTIE, a graduate of the University of Edinburgh, studied also at Berlin and elsewhere abroad. Professor of physics in the South African College, Cape Town, from 1897 until 1918, he is now vice-chancellor and principal of the University of Cape Town. In 1909 (collaborating with Prof. J. T. Morrison) he brought to successful issue a magnetic survey of South Africa.

Sir THOMAS HOLLAND, Rector of the Imperial College of Science and Technology, received his scientific training at the Royal College of Science, South Kensington. He joined the Geological Survey of India in 1890, and was appointed professor of geology and mineralogy in the Presidency College, Calcutta, in 1893. From 1903 until 1909 he was director of the Geological Survey of India. Returning to England he became professor of geology and mineralogy in the University of Manchester, occupying the post for nine years. The Geological Society of London awarded him its Bigsby medal in 1913 in recognition of eminent services rendered to geology, more especially during his tenure of office in India. Sir Thomas is chairman of council of the Royal Society of Arts.

Prof. FILON has been Goldsmid professor of applied mathematics and mechanics in the University of London since 1912. Born at St. Cloud, France, he was educated at University College, London, and his energies, in the past and present, have centred there.

Dr. CHALMERS MITCHELL was born at Dunfermline. He graduated at the University of Aberdeen and Christ Church, Oxford, studying as well at Berlin and Leipzig. Since 1903 he has been secretary of the Zoological Society of London. Dr. Mitchell has made notable contributions to biological science, and has in addition promoted wide interest in scientific progress generally by numerous articles and other works.

Prof. J. COSSAR EWART was born at Penicuik, Midlothian, and graduated at the University of Edinburgh. Sometime occupant of the chair of natural history in the University of Aberdeen, he returned to Edinburgh in 1882, becoming Regius professor of natural history. Prof. Ewart has specially studied fishery questions; whilst he has written many critical memoirs on the development of the horse and on animal heredity.

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## Societies and Academies.

LONDON.

**The Physical Society**, October 22.—Ernest Wilson: The corrosion products and mechanical properties of certain light aluminium alloys, as affected by atmospheric exposure. Experiments have been made upon the electrical conductivities, the corrosion products and tensile properties of high purity aluminium, and certain light aluminium alloys, which have been exposed to London atmosphere for a period of twenty-four years. The elements concerned are copper, nickel, manganese, and zinc in varying amounts up to a few per cent. There is also a note on the corrosion products of high conductivity copper.—M. C. Johnson: The distribution of intensity in a positive ray spectral line (Part 2). The distribution of velocity among the particles contributing to the 'moving' spectrum is compared with the distribution of velocity in positive rays measured by the electromagnetic method and with some investigations of Betschinsky and Döpel. The appearance of the many-lined spectrum of hydrogen in the positive rays, and the ratio of intensity of the 'moving' and 'resting' spectra is also considered. The inverse square law of probability of electron capture, and some consequences of the work of Wien and Rüdhardt, are the most likely controlling factors in the several phenomena.

**Optical Society**, October 28.—R. Kingslake: The analysis of an interferogram. It has been frequently suggested that it should be possible to analyse mathematically the interferometer pattern produced by a lens, in order to obtain a measure of the aberrations from the coefficients of the terms in the various orders of  $x$  and  $y$ .  $x$  and  $y$  are here the co-ordinates of a point on the interferogram, the optical path difference of which relative to the central ray of the lens is known at once by counting the fringes. Results obtained by this method do not agree well with those obtained under identical conditions by the oblique Hartmann test.—T. Smith: The stationary value of axially symmetric functions (Part 2). Alternative methods to those described in Part 1 of constructing a series representing the stationary value of a given function are developed and applied to evaluate all the terms not involving powers and products of the coefficients of the function higher than the eleventh. The formula in its optical applications enables the first 451 monorhythmic aberrations of a symmetrical optical instrument to be determined.

**Mineralogical Society**, November 2.—L. J. Spencer: (1) Schultenite, a new mineral from South-West Africa. The colourless platy crystals from Tsumeb are monoclinic ( $a:b:c=0.8643:1.0.7181$ ,  $\beta=84^\circ 36'$  and gave on analysis by E. D. Mountain the formula  $PbHAsO_4$ . They are identical with crystals prepared artificially by the late Baron A. de Schulten in 1904 (see NATURE, Sept. 18, 1926, p. 411). (2) Aramayoite, a new mineral from Bolivia. This was found in 1925 in a silver-tin vein in the Animas mine at Chocaya. It shows a confused aggregate of cleavage plates with iron-black colour and brilliant metallic lustre. In addition to the perfect basal cleavage there are also good cleavages following a steep tetragonal pyramid. The mineral is pseudotetragonal. Analyses by T. B. McGhie and by E. D. Mountain give the formula  $Ag(Sb, Bi)_2S_2$ .—K. Yardley: (1) X-ray examination of aramayoite. Some photographs taken with the beam perpendicular to the perfect basal cleavage (001) show no symmetry; powder photographs also show that the tetragonal symmetry

apparently indicated by the cleavages does not actually exist. Ionisation spectrometer data reveal the triclinic nature of the mineral and give a complete crystallographic description:  $a = 5.672 \text{ \AA.U.}$ ,  $b = 5.688$ ,  $c = 5.623$ ;  $\alpha = 86^\circ 55'$ ,  $\beta = 90^\circ 53'$ ,  $\gamma = 93^\circ 18'$ . The structure is pseudo-tetragonal with two molecules of  $\text{Ag(Sb, Bi)S}_2$  in a minimum cell. (2) The structure of baddeleyite and of prepared  $\text{ZrO}_2$ . The natural form of  $\text{ZrO}_2$  is monoclinic with four molecules in the unit cell. Ionisation spectrometer measurements on a single crystal and powder photographs both indicate a distorted  $\text{CaF}_2$  arrangement of the ions. The structures of three specimens of the mineral from entirely different sources are practically identical, except for slight variations of spacing due to the presence of impurity. Powder photographs of prepared zirconia from two distinct sources are almost identical with those of baddeleyite and show that prepared zirconia is also monoclinic and not (as previously stated) tetragonal.—W. Binks: The crystalline structure of zircon. X-ray examination of zircon shows the structure of zircon to correspond to the space group  $D_{4h}^{19}$ . The unit cell containing eight molecules  $\text{ZrSiO}_4$  has dimensions  $a = 0.30$ ,  $c = 5.93 \text{ \AA.U.}$  The silicon and zirconium atoms form two interpenetrating face-centred lattices, and the oxygen atoms are arranged tetrahedrally around the silicon atoms. The structure has some resemblances to that of anhydrite ( $\text{CaSO}_4$ ).

Society of Public Analysts, November 3.—W. R. Schoeller and C. Jahn: Investigations into the analytical chemistry of tantalum, niobium, and their mineral associates. (vi.) The precipitation of the earth acids by sodium compounds. When tantalic oxide is fused with potassium carbonate and the solution of the mass treated with sodium chloride, 4:3 sodium tantalate is precipitated. Niobic oxide treated in the same manner yields 7:6 sodium niobate. The precipitates are dense, crystalline powders. Sodium tantalate and niobate are decomposed by dilute acid. The quantity of the latter is proportional to that of the alkali in the precipitates. This reaction was applied to the indirect volumetric determination of the earth acids in the mixed sodium salts, but the end-point could not be ascertained with sufficient sharpness with colour indicators.—A. E. Parkes: A simple method of testing for sulphites in foods. The food (if not a liquid) is mixed with water and placed with fragments of marble and dilute (about 2N) hydrochloric acid in a conical flask, closed with a rubber stopper bearing a small thistle funnel bent twice and having a small bulb on each limb. The funnel contains a few drops of dilute (0.01N) iodine solution and dilute barium chloride solution. After evolution of carbon dioxide has ceased, the flask is heated, and, in the presence of a sulphite, the colour of the iodine in the funnel is discharged and the liquid becomes opalescent (barium sulphate). The test may be made approximately quantitative.—J. W. Haigh Johnson: A critical review of the methods of analysing waters, sewages and effluents, with suggestions for their improvement. Present methods yield results which are often inconsistent. Recent modifications in sewage treatment have greatly increased the amount of nitrogen oxidation products. Comparing the Wanklyn, Kjeldahl, acid chemical, and biological processes, the first is too vague, whilst the acid chemical test yields only a fifth of the result obtained biologically. A method of combining the Wanklyn test and the alkaline oxidation method is described, and suggestions are made for improving the Kjeldahl test and for the biological determination of absorbed oxygen.

PARIS.

Academy of Sciences, October 18.—G. Bigourdan: The equations of diverse origins, which may affect the pendulum corrections  $C_p$  adopted at the Bureau International de l'Heure (B.I.H.), year 1925. Marin Molliard: The dimorphism determined in the gall of *Mikiola Fagi* by a secondary parasite. Some oak galls from the forest of Fontainebleau were observed to differ in shape and other characteristics from the normal gall, and this has been shown to be due to another parasite, identified by Ch. Ferrière as *Secodes coactus*. Similar galls have since been observed in abundance in other parts of France, Normandy, Brittany, Savoy.—Charles Richet and Oxner: The accommodation of salt-water fish to supersaturated waters. A study of the effect on *Sargus Rondeleti* of a gradual increase in the proportion of sodium chloride in the water. This fish could support a salinity 37 per cent. above the normal, but a diminution to 18 per cent. below the normal caused death. J. Costantin: The variability of living beings according to prehistoric man.—Ch. Depéret: The neolithic layer of Glozel (Allier). Some doubt has been thrown on the authenticity of the objects found at Glozel: the author's own excavations and observations confirm the view of Morlet that the find is authentic, and of extreme importance.—Léon Guillet and Albert Portevin: The influence of the chemical composition of alloys on the possibility of making castings.—E. Bataillon and Tchou Su: Activation and rectification in the parthenogenesis of the echinides by hypertonic solutions alone.—Paul Alexandroff: The dimension of closed ensembles.—Léon Pomey: Partial differential equations and linear integro-differential equations with an infinity of variables.—Leonida Tonelli: The double series of Fourier.—G. Cerf: The characteristics of partial differential equations of the first order.—André Roussel: Certain isoperimetric problems.—H. Galbrun: The propagation of a sound wave in the atmosphere.—A. Toussaint and E. Carafoli: The theory of supporting wings.—A. Dauvillier: The discovery of the characteristic  $O$  and  $N$  series of low frequency. Spectrographic joining of the X-rays and the extreme ultra-violet. Utilising a thorium filament prepared by M. de Boer, good spectra have been obtained with 25 milliamperes at 2800 volts. These show the pure low frequency spectrum of thorium, consisting of the characteristic  $N$  and  $O$  radiations. The line  $121 \text{ \AA.U.}$  approaches the optical spectra obtained by Millikan in the extreme ultra-violet (limit of aluminium,  $136 \text{ \AA.U.}$ ).—H. Pilon and A. Laborde. The immersion of metals in homogeneous media opaque to the X-rays. Improvement of radiographic methods. The method suggested consists in immersing the metallic body in a homogeneous saline solution the absorption co-efficient of which, for the X-rays used, is nearly that of the metal. Some suitable solutions are given: for aluminium a 35 per cent. solution of barium chloride, for iron, barium iodide (159 gm. in 100 c.c. of solution), for copper, the same barium iodide solution. Under these conditions discontinuity in the metal is very clearly shown.—Jean Bouldoires: The transformations undergone by aluminium bronzes. Results are given of a thermal analysis, measurements of resistance and micrographic study of aluminium bronzes submitted to varying heat treatment.—Georges Delbart: The magnetic permeability of cold-drawn steels.—Emile André and Mlle. Th. François: The saturated fatty alcohols of the oil of the sperm whale and of *blanc de baleine*.—Guy Emschwiller: The action of magnesium on methylene iodide. The reaction (in ether) is vigorous and takes place

in two directions, one giving ethylene, the other the magnesium compound  $\text{CH}_2(\text{MgI})_2$ . The latter gives methane on treatment with water.—**Alfred Carpentier**: The extension of the Weald in the north of France.—**A. Maige**: Observations on the amylogenesis in the cotyledons of the pea.—**F. Henrijean**: The signification of the electrocardiogram.—**René Hazard** and **Raymond Hamet**: The circulatory action of pseudo-pelletierine.—**H. Barthélemy**: Comparative influence of the pH and the saline concentration on the duration of survival of the spermatozooids of *Rana fusca*.—**Mme. Anna Drzewina** and **Georges Bohn**: The activation by light of the effects of silver on *Convoluta*. The destruction of *Convoluta* by metallic silver in water is partially dependent upon light. In a strong light the poisonous action is much more rapid.—**René Fabre**: Cholesterol allophanate and its use in biological chemistry. The preparation and properties of cholesterol allophanate is described: it may prove useful in various problems in biological chemistry.—**Constantino Gorini**: The action of *B. typhosus* on milk.

## Diary of Societies.

SATURDAY, NOVEMBER 20.

**BRITISH MYCOLOGICAL SOCIETY** (at University College), at 11 A.M.—**W. R. Ivimey Cook**: The Genus *Ligniera*.—**Prof. O. V. Darbishire**: *Isidia* and *Soredia* of the Lichen *Peltigera*.—**W. J. Dowson**: An Extraordinary Botrytis causing a Disease of Narcissus Leaves.—**W. A. Roach**: On the Nature of Disease Resistance in Plants, with Special Reference to Wart Disease of Potatoes.—**Miss A. Lorrain Smith**: A New Family of Lichens.

**ROYAL SANITARY INSTITUTE** (at Town Hall, Colchester), at 11 A.M.—Discussions on Rheumatism in School Children and The Plan and Design of a Public Elementary School.

**NORTH OF ENGLAND INSTITUTE OF MINING AND MECHANICAL ENGINEERS** (Associates and Students Section) (at Neville Hall, Newcastle-upon-Tyne), at 8.—**L. F. H. Booth**: Screening and Washing Plant at Deaf Hill Colliery.

**ROYAL INSTITUTION OF GREAT BRITAIN**, at 3.—**Rev. E. M. Walker**: The Study of History (3).

**INSTITUTE OF BRITISH FOUNDRYMEN** (Lancashire Branch, Junior Section) (at College of Technology, Manchester), at 7.—**A. H. Goodger**: The Foundry Cupola.

**HULL ASSOCIATION OF ENGINEERS** (at Technical College, Hull), at 7.15.—**O. C. Dinerman**: Starters for Alternating-current Motors.

MONDAY, NOVEMBER 22.

**CAMBRIDGE PHILOSOPHICAL SOCIETY** (in Cavendish Laboratory, Cambridge), at 4.30.—**Dr. H. W. B. Skinner**: On the Polarisation of Mercury Lines Emitted from a Discharge Tube in a Magnetic Field.—**C. F. Shuman**: The Application of the Method of the Magnetic Spectrum to the Study of Secondary Electronic Emission.—**L. H. Thomas**: The Calculation of Atomic Fields.—**L. Wertenstein**: A Contribution to the Theory of Diffusion Pumps.—*To be communicated by title only*.—**W. Burnside**: On a Group of Order 25920 and the Projective Transformations of a Cubic Surface.—**Dr. P. A. M. Dirac**: The Compton Effect in Wave Mechanics.—**J. B. S. Haldane**: A Mathematical Theory of Natural and Artificial Selection. Part IV.—**R. Hargreaves**: Geodetic and Dynamical Principles, a Comparison and Connexion.—**G. C. Steward**: On the Addition of the Primary Aberrations.

**INSTITUTION OF ELECTRICAL ENGINEERS** (Informal Meeting), at 7.—**J. F. Shipley** and others: Discussion on Comparative Electrical Progress in European Countries.

**INSTITUTION OF ELECTRICAL ENGINEERS** (North-Eastern Centre) (Informal Meeting) (at Sopwith's Lounge, Newcastle-upon-Tyne), at 7.

**INSTITUTION OF ELECTRICAL ENGINEERS** (Mersey and North Wales (Liverpool) Centre) (at Liverpool University), at 7.—**J. R. Beard** and **T. G. N. Haldane**: The Design of City Distribution Systems and the Problem of Standardisation.

**INSTITUTION OF MECHANICAL ENGINEERS** (Graduates' Section, London), at 7.—**Lt.-Col. E. Kitson Clark**: Archeological Engineering (Lecture).

**ROYAL SOCIETY OF ARTS**, at 8.—**Prof. H. L. Callendar**: Recent Experiments on the Properties of Steam at High Pressure (II).

**CHEMICAL INDUSTRY CLUB**, at 8.—**C. S. Garland**: The Incandescent Gas-Mantle Industry.

**ROYAL SOCIETY OF MEDICINE** (Odontology Section), at 8.—**Dr. E. W. Fish**: Further Notes on the Lymph Supply of Enamel and Dentine.

**ROYAL GEOGRAPHICAL SOCIETY** (at Eolian Hall), at 8.30.—**C. Gillman**: South-West Tanganyika Territory.

**MEDICAL SOCIETY OF LONDON**, at 8.30.—**Dr. C. Riviere** and **J. E. Roberts**: The Treatment and Diagnosis of Bronchiectasis.

TUESDAY, NOVEMBER 23.

**ROYAL INSTITUTION OF GREAT BRITAIN**, at 5.15.—**Sir William Bragg**: The Imperfect Crystallisation of Common Things (I).

**INSTITUTION OF AUTOMOBILE ENGINEERS** (Informal Meeting) (at 83 Pall Mall, S.W.1), at 7.—**Inventors' Evening**. Discussion of Motor Car Devices not yet on the Market.

**ROYAL PHOTOGRAPHIC SOCIETY OF GREAT BRITAIN** (Kinematograph Group), at 7.—**Lecture**.

**SOCIETY OF CHEMICAL INDUSTRY** (South Wales Section) (jointly with South Wales and Bristol Sections of Institution of Civil Engineers and South Wales Section of Society of Chemical Industry) (at Technical College, Cardiff), at 7.30.—**T. M. McKenzie**: Asphaltic Roads.

**ROYAL ANTHROPOLOGICAL INSTITUTE** (jointly with English Folk-Dance Society and Folk-Lore Society) (at Royal College of Music, South Kensington), at 8.30.—**Miss Violet Alford**: The Ritual Dance.

**BRITISH PSYCHOLOGICAL SOCIETY** (Medical Section) (at Royal Society of Medicine), at 8.30.—**Dr. B. Gluck**: Current Tendencies in American Criminology.

WEDNESDAY, NOVEMBER 24.

**ROYAL INSTITUTE OF PUBLIC HEALTH**, at 4.—**Dr. C. W. Saleeby**: From Heliotherapy to Heliohygiene.

**INSTITUTION OF AUTOMOBILE ENGINEERS** (Manchester Centre) (at Engineers' Club, Manchester), at 7.—**J. E. Southcombe**: Recent Research on Friction and Lubrication.

**INSTITUTION OF ELECTRICAL ENGINEERS** (North-Eastern Centre) (at Literary and Philosophical Society, Newcastle-upon-Tyne), at 7.—**Prof. W. M. Thornton**: What is Electricity? (Faraday Lecture).

**ROYAL SOCIETY OF ARTS**, at 8.—**W. S. Bradley**: Industrial Welfare in Practice.

**EUGENICS SOCIETY** (at Royal Society), at 8.30.—**Mrs. S. Gretton**: Oxford Village Pedigrees.

THURSDAY, NOVEMBER 25.

**ROYAL INSTITUTION OF GREAT BRITAIN**, at 5.15.—**Dr. R. R. Marett**: The Archaeology of the Channel Islands—Neolithic and Bronze Ages.

**ROYAL SOCIETY OF MEDICINE** (Balneology and Climatology Section), at 5.30.—**Dr. R. Ackerley**: Presidential Address.

**INSTITUTION OF AUTOMOBILE ENGINEERS** (Luton Graduates' Meeting) (at Luton), at 7.30.—**T. T. Brown**: Lubrication.

**ROYAL SOCIETY OF MEDICINE** (Urology Section), at 8.30.—**Clinical Pathological Meeting**.

**INSTITUTION OF MECHANICAL ENGINEERS** (at Bristol).—**Prof. E. G. Coker**: Elasticity and Plasticity (Thomas Hawksley Lecture).

FRIDAY, NOVEMBER 26.

**SOCIETY OF CHEMICAL INDUSTRY** (Manchester and Fuel Sections) (at Municipal College of Technology, Manchester), at 10 A.M.—**Tar Symposium**.

**DIESEL ENGINE USERS' ASSOCIATION** (at Caxton Hall), at 3.30.—**R. L. Quertier**: Modern Air Compressor Practice in Oil Engine Installations.

**PHYSICAL SOCIETY OF LONDON** (at Imperial College of Science and Technology), at 5.—**H. C. Hepburn**: Electro-endosmosis and Electrolytic Water Transportation.—**L. Hartshorn**: The Input Impedance of Thermionic Valves at Low Frequencies.

**NORTH-EAST COAST INSTITUTION OF ENGINEERS AND SHIPBUILDERS** (at Newcastle-upon-Tyne), at 6.—**Dr. E. V. Telfer**: The Practical Analysis of Merchant Ship Trials and Service Performance.

**INSTITUTION OF ELECTRICAL ENGINEERS** (London Students' Section), at 6.15.—**H. J. D. Palfrey**: The Measurement of Light.

**JUNIOR INSTITUTION OF ENGINEERS**, at 7.30.—**Col. the Master of Sempill**: Petrol and its Substitutes for use in Internal Combustion Engines.

**MANCHESTER LITERARY AND PHILOSOPHICAL SOCIETY** (Chemical Section).

SATURDAY, NOVEMBER 27.

**ROYAL INSTITUTION OF GREAT BRITAIN**, at 3.—**Dr. G. C. Simpson**: Atmospheric Electricity (1).

PUBLIC LECTURES.

SATURDAY, NOVEMBER 20.

**HORNIMAN MUSEUM** (Forest Hill), at 3.30.—**H. MacLeod**: Eclipses of the Sun.

SUNDAY, NOVEMBER 21.

**GUILDHOUSE** (Eccleston Square), at 3.30.—**Dr. G. C. Simpson**: Meteorology in the Service of Man.

MONDAY, NOVEMBER 22.

**SHEFFIELD UNIVERSITY**, at 7.30.—**H. E. Stilgoe**: Water Supply and its relation to Public Health (Chadwick Lecture).

TUESDAY, NOVEMBER 23.

**GOLDSMITHS' HALL**, at 4.—**Prof. J. S. Huxley**: Biology and Human Life (Norman Lockyer Lecture).

**KING'S COLLEGE**, at 5.30.—**Miss Hilda D. Oakeley**: Modern Theories of the Nature of Value in Psychology and Philosophy. (Succeeding Lecture on November 30.)

WEDNESDAY, NOVEMBER 24.

**UNIVERSITY COLLEGE**, at 5.30.—**Dr. W. D. Johnston**: The Library of Congress, its Functions as a National Library.

**LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE**, at 6.—**G. W. Mayne**: The Monroe Calculating Machine.

THURSDAY, NOVEMBER 25.

**COLLEGE OF NURSING** (Henrietta Street, W.), at 5.30.—**Dr. Mary Buchan Donie**: The Adolescent and Social Hygiene from the Standpoint of the Home.

**IMPERIAL COLLEGE OF SCIENCE AND TECHNOLOGY**, at 5.30.—**Brig.-Gen. H. Hartley**: Chemical Warfare.

**FULHAM CENTRAL PUBLIC LIBRARY**, at 8.—**A. D. Allen**: Home-Grown Food.

SATURDAY, NOVEMBER 27.

**HORNIMAN MUSEUM** (Forest Hill), at 3.30.—**J. E. S. Dallas**: Nature in Southern England.

SUNDAY, NOVEMBER 28.

**GUILDHOUSE** (Eccleston Square), at 3.30.—**Viscount Haldane**: The Wider Meaning of Relativity.

CONFERENCE.

FRIDAY, NOVEMBER 26.

**TAR CONFERENCE** (at the College of Technology, Manchester), at 10.30 A.M.—**F. S. Sinnatt** and **Dr. J. G. King**: A Study of Tars and Oils obtained from Coal.—**W. G. Adam**: A Plan for Standardisation of Analytical Methods in Coal Tar Products Specifications.—**H. M. Spiers**: (a) The Viscosity of Tar; (b) The Consistency of Bitumen Mixtures.—**At 2**.—**Dr. A. Parker**: Tar from Steamed Vertical Retorts.—**J. McLeod**: Notes on Vertical Retort Tar.—**M. Barash**: The Production of Road Tar from Vertical Retorts.—**H. Hollings**: The Influence of Carbonising Conditions on the Free Carbon Content of Tar.—**At 5**.—**H. G. Adam** and **H. W. Robinson**: Tar from the Point of View of the Highway Authority.—**A. C. Tait**: Coal Tar Disinfectants.—**H. F. Taylor**: Pitch.