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Society for the Encouragement of Arts, Manufactures, and Commerce,

JOHN-STREET, ADELPHI, LONDON, W.C.

FOUNDED IN 1754. INCORPORATED BY ROYAL CHARTER IN 1847.

ONE-HUNDRED-AND-FIFTY-SECOND SESSION, 1905-1906.

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SESSIONAL ARRANGEMENTS.

ORDINARY MEETINGS.

Wednesday Evenings, at 8 o'clock:—

NOVEMBER 15.—SIR OWEN ROBERTS, M.A., D.C.L., F.S.A., Vice-President and Chairman of the Council. Opening Address.

” 22.—F. MARTIN-DUNCAN, “The Cinematograph and its Applications.” PROFESSOR H. E. ARMSTRONG, Ph.D., LL.D., F.R.S., in the chair.

” 29.—SIR WILLIAM H. PREECE, K.C.B., F.R.S., “The British Association in South Africa.” SIR OWEN ROBERTS, M.A., D.C.L., F.S.A. (Chairman of the Council), in the chair.

DECEMBER 6.—SIGMUND STEIN, “The Manufacture of Sugar from British Grown Beet.” THE RIGHT HON. THE EARL OF DENBIGH, C.V.O., in the chair.

” 13.—W. F. MITCHELL, “The Commerce and Industries of Japan.” HIS EXCELLENCY VISCOUNT HAYASHI, G.C.V.O., LL.D., D.C.L., Japanese Ambassador, in the chair.

” 20.—CHARLES L. BURDICK, “The Aerograph Method of Distributing Colour.” CARMICHAEL THOMAS in the chair.

JANUARY 17.—WILLIAM ARTHUR ATKIN, M.D., “The Scientific Aspects of Voice Development.” AUGUSTUS D. WALLER, M.D., C.M., LL.D., F.R.S., in the chair.

” 24.—DR. J. NISBET, “The Planting of Waste Lands for Profit.” HENRY JOHN ELWES, F.R.S., in the chair.

” 31.—THOMAS ADAMS, “The Garden City and the Cheap Cottage.” FABIAN WARE in the chair.

FEBRUARY 7.—LEON GASTER, A.M.I.E.E., “Progress in Electric Lighting.” SIR WILLIAM H. PREECE, K.C.B., F.R.S., in the chair.

” 14.—CLAUDE JOHNSON, “The Horseless Carriage, 1885-1905.” COLONEL H. C. L. HOLDEN, R.A., F.R.S., in the chair.

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- FEBRUARY 21.—WALTER GARSTANG, M.A., "The Fisheries of the North Sea and the Bearings of Recent Investigations upon the Problems of Supply." PROFESSOR EDWIN RAY LANKESTER, M.A., LL.D., F.R.S., in the chair.
- " 28.—CAPTAIN G. S. C. SWINTON, "London Traffic." SIR JOHN WOLFE-BARRY, K.C.B., LL.D., F.R.S., in the chair.
- MARCH 7.—J. C. DOLLMAN, A.R.W.S., "Art in Painting and Photography." DAVID MURRAY, R.A., in the chair.
- " 14.—GEOFFREY DRAGE, "Imperial Organisation from a Business Point of View." RIGHT HON. ALFRED LYTTTELTON, K.C., in the chair.
- " 21.—BERNARD B. REDWOOD, B.A., "Motor Boats." SIR JOHN I. THORNYCROFT, LL.D., F.R.S., in the chair.
- " 28.—ARTHUR J. MARTIN, Assoc. M.Inst.C.E., M.R.San.I., "Coal Conservation, Power Transmission and Smoke Prevention."
- APRIL 4.—MRS. ERNEST HART, "Ramie and its Possibilities."
- " 25.—FREDERIC T. CORKETT, "The Production and Collection of Picture Postcards."
- MAY 2.—J. B. MILLET, "Submarine Signalling."
- " 9.—PROFESSOR THOMAS OLIVER, M.A., M.D., LL.D., "Bridge Building by means of Caissons, including remarks upon Compressed Air Illness."
- " 16.—CLAYTON BEADLE, "Watermarking in Hand and Machine Papermaking."

INDIAN SECTION.

Thursday Afternoons, at 4.30 o'clock :—

- DECEMBER 7.—SIR JAMES A. BOURDILLON, K.C.S.I., "The Partition of Bengal." THE RIGHT HON. LORD GEORGE HAMILTON, G.C.S.I., M.P., in the chair.
- JANUARY 18.—CHARLES EDWARD BUCKLAND, C.I.E., "The City of Calcutta." SIR JAMES L. MACKAY, G.C.M.G., K.C.I.E., in the chair.
- FEBRUARY 15.—ROBERT BURTON BUCKLEY, C.S.I., late Chief Engineer Bengal Irrigation, "The Navigable Waterways of India." THE RIGHT HON. J. E. ELLIS, M.P., Under-Secretary of State for India, in the chair.
- MARCH 15.—DR. GEORGE A. GRIERSON, C.I.E., Ph.D., D.Lit., "The Languages of India and the Linguistic Survey." SIR CHARLES JAMES LYALL, K.C.S.I., C.I.E., LL.D., in the chair.
- APRIL 26.—COLONEL ARTHUR HENRY MCMAHON, C.S.I., late British Commissioner, Seistan Arbitration Commission, "Seistan: Past and Present."
- MAY 24.—MAJOR PERCY MOLESWORTH SYKES, C.M.G., H.M.'s Consul-General at Meshed, "The Parsis of Persia."

COLONIAL SECTION.

Tuesday Afternoons, at 4.30 o'clock :—

- DECEMBER 14 (THURSDAY).—THE HON. RODOLPHE LEMIEUX, K.C., M.P., "Glimpses of French Canada." THE RIGHT HON. LORD STRATHCONA, G.C.M.G., in the chair.
- FEBRUARY 6.—OCTAVIUS CHARLES BEALE, President of the Federal Council of the Chambers of Manufactures of Australia, "Imperial Immigration." SIR WESTBY B. PERCEVAL, K.C.M.G., in the chair.
- MARCH 6.—SIR NEVILLE LUBBOCK, K.C.M.G., "Imperial Questions in the West Indies." THE RIGHT HON. LORD STRATHCONA, G.C.M.G., in the chair.
- MAY 1.—THE HON. J. G. JENKINS, Agent-General for South Australia, "Social Conditions in Australia."

APPLIED ART SECTION.

Tuesdays, at 4.30 or 8 o'clock :—

- DECEMBER 12.—LOUIS N. PARKER, "Historical Pageants." SIR MARCUS SAMUEL, Bart., Vice-President of the Society, in the chair.
- JANUARY 30.—PROFESSOR J. M. THOMSON, LL.D., F.R.S., "Chemistry of Artists' Colours in Relation to their Composition and Permanency." SEYMOUR LUCAS, R.A., in the chair.
- FEBRUARY 20.—H. YATES THOMPSON, F.S.A., "Some Illuminated Manuscripts of Continental Europe." THE HON. JOHN W. FORTESCUE in the chair.
- MARCH 20.—CYRIL DAVENPORT, F.S.A., "English Royal Heraldry." WILLIAM A. LINDSAY, K.C., Windsor Herald, in the chair.
- MAY 8.—SHERARD COWPER-COLES, "Damascening and the Inlaying and Ornamenting of Metallic Surfaces."
- " 29.—HARRY POWELL, "Cut Glass."

CANTOR LECTURES.

Monday evenings, at 8 o'clock :—

J. A. FLEMING, D.Sc., F.R.S., "The Measurement of High Frequency Currents and Electric Waves." (In continuation of previous courses on "Electric Oscillations and Electric Waves," and on "Hertzian Wave Telegraphy.") Four Lectures.

LECTURE I.—NOVEMBER 27.—Measurement of High Frequency Capacity, Inductance, and Resistance.—Practical methods of measuring small capacities—Capacity of Leyden jars, aerial wires, antennae and insulated conductors—Formulae for capacity of standard forms—Practical measurement of small inductances—Pre-determination of inductances of standard circuits—High frequency resistance—Surface distribution of high frequency currents—Methods of determining spark resist-

ance—Methods of measuring number of sparks per second—Effect of proximity of aerial wires on their capacity and inductance.

LECTURE II.—DECEMBER 4.—*Measurement of High Frequent Voltage and Current.*—Damping of electrical oscillations—Maximum and mean-square values—The damping factor and logarithmic decrement—The resistance decrement and radiation decrement—Damping due to dielectric hysteresis and magnetisation—Methods of determining maximum and mean-square voltage—Spark voltage in air at various pressures—Electrometer measurements—Calculation of maximum currents during discharge—Methods of determining logarithmic decrements employed by Rutherford, Bjerknes, Drude and others—Analysis of the discharge of a Leyden jar, or condenser.

LECTURE III.—DECEMBER 11.—*Measurement of Frequency and Resonance.*—Time period and oscillation constant of a condenser circuit—Closed and open circuit syntonistic circuits—Theory of resonance—Experiments illustrating resonance—Resonance curves—Determination of the total decrement from resonance curves—The Cymometer—Its use for determining small capacities and inductances—Theory of the oscillation transformer—Analysis of the phenomena of the oscillation transformer by the aid of the Cymometer.

LECTURE IV.—DECEMBER 18.—*Measurement of Free and Stationary Wave-Length.*—Stationary waves on wires—Velocity of propagation—Mechanical model—Loops and nodes of potential and current—Special qualities of spirals—Methods of detecting loops and nodes—Radiation from aerial wires—Velocity of free waves—Relations of free-wave length to antenna length—Direct and inductively coupled aërials—Determination of the wave-length and damping of the waves radiated from antennæ—Methods of syntonising coupled circuits with the Cymometer.

SIR WILLIAM H. WHITE, K.C.B., LL.D., F.R.S., "Modern Warships." Five Lectures.

LECTURE I.—JANUARY 29.—Characteristic features of warships—Materials for construction—Structural arrangements—Operations of building and launching.

LECTURE II.—FEBRUARY 5.—Armour protection—Systems of disposition—Methods of manufacturing armour plates—Recent improvements in quality, and consequent changes in designs of warships.

LECTURE III.—FEBRUARY 12.—Armaments—Progress in the design and manufacture of guns, mountings and machinery for working heavy guns—Improvements in projectiles and explosives.

LECTURES IV. AND V.—FEBRUARY 19 AND 26.—Recent types of warships, British and Foreign—Battleships—Armoured and protected cruisers—Scouts—Torpedo boats and destroyers—Submarines.

PROF. VIVIAN B. LEWES, "Fire: Fire Risks and Fire Extinction." Four Lectures.

LECTURE I.—MARCH 12.—The science of fire—Ignition—Slow combustion—Spontaneous combustion—Results of combustion—Flame—Smoke—The oxides of carbon, and water vapour—Causes of fire and their classification.

LECTURE II.—MARCH 19.—Fire risks—Matches—Defective flues and over-heated stoves—Action of heat on wood—Pyrophoric carbon—Lighting dangers—Candles, oil lamps, gas, and electricity.

LECTURE III.—MARCH 26.—Storage dangers—Spontaneous ignition of material in bulk—Lamp-black—Charcoal—Coal—Fibre—Greasy waste and rags—Vapours—Dust and dust explosions—Nitro compounds—Collodion goods.

LECTURE IV.—APRIL 3.—Fire prevention.—The fallacies existing as to fireproof material—Stone and iron *versus* wood—Heat conductivity—Fire-proofing wood and textile fabrics—Fire extinction—Sprinklers—Chemical fire extinguishers—Alarms.

ALFRED MASKELL, "Ivory." Three Lectures.

April 23, 30, May 7.

GEORGE W. EVE, "Heraldry in Relation to the Applied Arts." Three Lectures.

May 14, 21, 28.

HOWARD LECTURES.

Thursday evenings, at 8 o'clock:—

PROFESSOR SILVANUS P. THOMPSON, D.Sc., F.R.S., "High Speed Electric Machinery, with special reference to Steam-turbine Machines." Three Lectures.

LECTURE I.—JANUARY 18.—*The Problems of Electric Design as affected by Speed and rated Output.*—Economic generation of electric energy dependent on cost of prime power, on type of prime mover, and on design of electric generator—Slow-speed generators developed on Continent and in United States to suit slow-speed engines, or for coupling to water turbines—High-speed engines developed in England, to suit high-speed generators—More recently the use of motor generators and of steam-turbines has emphasized the development of new forms of generators suitable for very high speeds—Output of an electric generator dependent on iron, copper, speed, and insulation—Dependence of design on "factors of utilisation"—Conception of the "active belt." Efficiency—Energy-losses in different parts—Ventilation—Regulation—Frequency—Commutation—Relation of surface-speed to design—Limits of design as to (1) strength of materials, (2) permissible temperature-rise, (3) sparkless commutation—Output rules—Examples of low-speed design—Examples of high-speed design.

LECTURE II.—JANUARY 25.—*Turbo-dynamos.*—The problem of commutation—Use of carbon brushes and of metal brushes—Natural and forced commutation—Peripheral speed in relation to commutation—Loading of armatures—Armature distortion—Limits of design as affected by permissible temperature-rise and by sparkless commutation under all loads—Problem of centrifugal forces as affecting dynamo design—Turbo-dynamo designs.

LECTURE III.—FEBRUARY 1.—*Turbo-alternators.*—Relation between frequency, number of poles, and revolutions per minute—Relation between frequency, surface-speed, and pole-pitch—Turbine speeds and field-magnet design—The limitations of magnet design—Balancing—Armature-design in alternators—Nature of armature reaction—Armature-design as affected by power-factor of the load—Mechanical considerations—Ventilation of turbo-alternators—Forced ventilation—Efficiency; overload possibilities; limits of design—Excitation of field-magnet system—Preference given to very low voltage of excitation—Examples of turbo-alternators.

JUVENILE LECTURES.

Wednesday Evenings, January 3 and 10, 1906, at 7 o'clock:—

PROFESSOR HERBERT JACKSON, F.I.C., "Combustion and Flame." (Illustrated by Experiments.)

CONVERSAZIONE.

The Annual Conversazione of the Society will probably be held on Thursday, June 28, 1906. Each member is entitled to a card for himself, and one for a lady.

PROCEEDINGS OF THE SOCIETY.

CHARTER.—THE SOCIETY OF ARTS was founded in 1754, and incorporated by Royal Charter in 1847, for "The Encouragement of the Arts, Manufactures, and Commerce of the Country, by bestowing rewards for such productions, inventions, or improvements as tend to the employment of the poor, to the increase of trade, and to the riches and honour of the kingdom;



and for meritorious works in the various departments of the Fine Arts; for Discoveries, Inventions, and Improvements in Agriculture, Chemistry, Mechanics, Manufactures, and other useful Arts; for the application of such natural and artificial products, whether of Home, Colonial, or Foreign growth and manufacture, as may appear likely to afford fresh objects of industry, and to increase the trade of the realm by extending the sphere of British commerce; and generally to assist in the advancement, development, and practical application of every department or science in connection with the Arts, Manufactures, and Commerce of this country."

THE SESSION.—The Session commences in November, and ends in June.

ORDINARY MEETINGS.—At the Wednesday Evening Meetings during the Session, papers on subjects relating to inventions, improvements, discoveries, and other matters connected with the Arts, Manufactures, and Commerce of the country are read and discussed.

INDIAN SECTION.—This Section was established in 1869, for the discussion of subjects connected with our Indian Empire. Six or more Meetings are held during the Session.

COLONIAL SECTION.—The Section was formed in 1874 under the title of the African Section, for the discussion of subjects connected with the Continent of Africa. It was enlarged in 1879, so as to include the consideration of subjects connected with our Colonies and Dependencies. Four or more Meetings are held during the Session.

APPLIED ART SECTION.—This Section was formed in 1886, for the discussion of subjects connected with the industrial applications of the Fine Arts. Six or more Meetings are held during the Session.

CANTOR LECTURES.—These Lectures originated in 1863, with a bequest by the late Dr. Cantor. There are several Courses every Session, and each course consists generally of from two to six Lectures.

ADDITIONAL LECTURES.—Special Courses of Lectures are occasionally given.

JUVENILE LECTURES.—A Short Course of Lectures, suited for a Juvenile audience, is delivered to the Children of Members during the Christmas Holidays.

ADMISSION TO MEETINGS.—Members have the right of attending the above Meetings and Lectures. They require no tickets, but are admitted by signing their names. Every Member can admit *two* friends to the Ordinary and Sectional Meetings, and *one* friend to the Cantor and other Lectures. Books of tickets for the purpose are supplied to the Members, but admission can be obtained on the personal introduction of a Member. For the Juvenile Lectures special tickets are issued.

JOURNAL OF THE SOCIETY OF ARTS.—The *Journal*, which is sent free to Members, is published weekly, and contains full Reports of all the Society's Proceedings, as well as a variety of information connected with Arts, Manufactures, and Commerce.

EXAMINATIONS.—Examinations, founded in 1853, are held annually by the Society, through the agency of Local Committees, at various centres in the country. They are open to any person. The subjects include the principal elements of Commercial Education, and Music. Full particulars of the Examinations can be had on application to the Secretary.

LIBRARY AND READING-ROOM.—The Library and Reading-room are open to Members, who are also entitled to borrow books.

CONVERSAZIONI are held, to which Members are invited, each Member receiving a card for himself and a lady.

MEMBERSHIP.

The Society numbers at present between three and four thousand Members. The Annual Subscription is Two Guineas, payable in advance, and dates from the quarter-day preceding election; or a Life Subscription of Twenty Guineas may be paid. There is no Entrance Fee.

Every Member whose subscription is not in arrear is entitled:—

- To be present at the Meetings of the Society, and to introduce two visitors at such meetings, subject to such special arrangements as the Council may deem necessary to be made from time to time.
- To be present and vote at all General Meetings of the Society.
- To be present at the Cantor and other Lectures, and to introduce one visitor.
- To have personal free admission to all Exhibitions held by the Society at its house in the Adelphi.
- To be present at all the Society's *Conversazioni*.
- To receive a copy of the weekly *Journal* published by the Society.
- To the use of the Library and Reading-room.

Candidates for Membership are proposed by Three Members, one of whom, at least, must sign on personal knowledge; or are nominated by the Council.

All subscriptions should be paid to the Secretary, Sir Henry Trueman Wood; and all Cheques or Post-office Orders should be crossed "Coutts and Company," and forwarded to him at the Society's House, John-street, Adelphi, London, W.C.

HENRY TRUEMAN WOOD, *Secretary*.