

14. DISTRIBUTION SYSTEMS

DESCRIPTION OF A LARGE SECONDARY BATTERY PLANT FOR GENERAL COMMERCIAL DISTRIBUTION

E. P. Roberts

Vol. ii—1885, pp. 1-3, paper No. 5

Brief description of an installation of batteries according to the Brush system for arc lighting, there being a separate battery in each block.

Discussion, pp. 3-20, by Messrs. W. A. Anthony, E. P. Roberts, ——— Hall, F. L. Pope, R. W. Pope, E. P. Thomson, S. F. Shelbourne, Geo. A. Hamilton, ——— Card, H. B. Slater, T. C. Martin, Rowland Hazard and ——— Carey.

Further information concerning the Brush battery system. General remarks on electric lighting.

Vol. iii—1886, pp. 1-6

Discussion of Sidney F. Shelbourne's paper on "Underground Electrical Systems" at Dinner and Special Meeting of the Institute.

UNDERGROUND ELECTRICAL SYSTEMS

Sydney F. Shelbourne

Vol. iii—1886, pp. 31-48

General discussion of the problems involved in the operation of the electric circuits underground. Description of the properties of various duct materials. Explanation of the relation between specific capacity and insulation quality. Discussion of the qualities of cable insulating materials. Account of troubles with corrosion of lead sheaths. Suggested methods of avoiding inductive disturbances on arc lighting cables and particularly telephone and telegraph lines.

Discussion, pp. 49-66, by Messrs. Frank L. Pope, W. D. Lockwood, T. D. Lockwood, C. O. Mailloux, G. C. Maynard, Sydney F. Shelbourne, ——— Young, Ralph W. Pope and O. E. Michaelis.

Experience with lead covered cables underground. Explanation of the corrosion of lead.

DISTRIBUTION OF ELECTRICITY BY SECONDARY GENERATORS

Vol. iv—1887, pp. 83-121

Topical discussion by Messrs. Frank L. Pope, Otto A. Moses, O. E. Michaelis, Elihu Thomson, Joseph Wetzler, C. O. Mailloux, ——— Church, Ralph W. Pope, E. E. Ries, ——— Wright, S. S. Wheeler, T. C. Martin and G. W. Mansfield.

General remarks on the alternating current system of electric distribution, covering its merits and characteristics. Experience in operation of such a system. Brief remarks on stationary transformer and account of development of Elihu Thomson's welder. Announcement of Elihu Thomson's self-starting alternating current motor.

STORAGE BATTERIES IN PRACTICE

E. P. Roberts

Vol. iv—1887, pp. 128-131

Brief statement of reasons for abandoning the Brush distributing battery system in favor of the central station.

Discussion, pp. 131-137, by Messrs. T. C. Martin, C. O. Mailloux, Joseph Wetzler, ——— Hamilton, Ralph W. Pope, Frank L. Pope and Edward P. Thompson.

General remarks on the storage battery and its uses in lighting and traction.

SOME OBJECTIONS TO THE OVERHEAD CONDUCTOR FOR ELECTRIC RAILWAYS

M. B. Leonard

Vol. v—1888, pp. 401-407

Account of experience with the overhead and return distribution system of the Richmond Union Passenger Railway, pointing out the many objections to that type of system.

ELECTRICAL NOTES OF A TRANSATLANTIC TRIP

Thomas E. Lockwood

Vol. vi—1889, pp. 411-425

Review of current practice in telegraphy, electric lighting and telephony in England and on the Continent of Europe. Brief mention of some of the Electrical exhibits at the Paris Exposition.

Discussion, pp. 425-439, by Messrs. F. L. Pope, Allen V. Garratt, T. C. Martin and G. L. Addenbrooke.

Additional information on the methods of construction employed in English distribution systems. Electric railways in England.

SOME METHODS OF REGULATING ACCUMULATORS IN ELECTRIC LIGHTING

George B. Prescott, Jr.

Vol. vi—1889, pp. 439-475

Discussion of the use of storage batteries in connection with lighting plants to help out the constant load factor and to save distribution copper. Description of typical installation, showing the use of overload circuit breakers and counter e. m. f. cells with the automatic end cell switches. Circuit diagrams.

Discussion, pp. 476-485, by Messrs. George B. Prescott, Jr., Townsend Wolcott, T. C. Martin, John W. Howell, R. W. Pope, Joseph Wetzler and Elihu Thomson.

Description of method of automatically maintaining constant e. m. f. at battery terminals.

THE PRACTICAL WORKING OF THE ELECTRICAL SUBWAYS OF NEW YORK CITY

William Mayer, Jr.

Vol. vii—1890, pp. 57-95

General review of current practice in the installation and operation of underground electrical circuits in New York City, covering the material and construction of the conduits; the construction, properties and installation of the cables and the operation of the systems.

Discussion, pp. 96-105, by Messrs. Charles Cuttriss; William Mayer,

Jr., Edward Lauterbach, Joseph Wetzler, W. J. Hammer, Georges d'Infreville, S. S. Wheeler, Wm. B. Halsey and James H. Seymour.

General remarks on the electrical distribution situation in New York City, with special reference to its political aspects.

SOME TESTS ON THE EFFICIENCY OF ALTERNATING-CURRENT APPARATUS

Louis Duncan and W. F. C. Hasson

Vol. vii—1890, pp. 109-117

Brief description of the efficiency test made on 750-lamp Westinghouse a. c. generator and distribution transformers. Discussion of effect of all-day efficiency upon system using large number of small transformers.

Discussion, pp. 118-127, by Messrs. W. A. Anthony, Nikola Tesla, H. Ward Leonard, S. S. Wheeler, Louis Duncan, O. T. Crosby, Frederick Darlington, John Millis, Townsend Wolcott, M. I. Pupin and J. B. Entz.

General remarks on transformer design. Comparative efficiency of direct-current with alternating-current distribution system.

THE INDUSTRIAL UTILIZATION OF THE COUNTER-ELECTROMOTIVE FORCE OF SELF INDUCTION

Thomas D. Lockwood

Vol. vii—1890, pp. 226-243

Outline of discovery and development of the uses of counter e. m. f. of self-inductance. Citing references to original articles and patents covering applications of counter e. m. f. of inductance in telephone, telegraph and lighting circuits.

No discussion.

SOME POSSIBLE MODIFICATIONS IN THE METHODS OF PROTECTING BUILDINGS FROM LIGHTNING

N. D. C. Hodges

Vol. viii—1891, pp. 159-167

Discussion of lightning phenomena based upon the writings of early scientists. Presentation of a method of protection by providing conductors with small cross section, which will be exploded by conduction of lightning discharge and thus harmlessly dissipate the energy.

Discussion, pp. 167-175, by Messrs. Edw. P. Thompson, Wm. E. Geyer, Townsend Wolcott, N. D. C. Hodges, Chas. Steinmetz, E. T. Birdsall and James Hamblet.

General remarks on the nature of lightning discharges. Explanation of the beneficial effect of high resistance lightning conductor.

A NEW GRAPHICAL METHOD OF CALCULATING LEADS FOR WIRING

Carl Hering

Vol. viii—1891, pp. 227-233

Theory, construction and method of using a universal graphical wiring chart. Reproduction of chart.

Discussion, pp. 233-235, by Messrs. F. A. C. Perrine, W. J. Hammer, C. O. Mailloux and Carl Hering.

Reference to other similar charts.

LIGHTNING ARRESTERS, AND THE DISCOVERY OF NON-ARCING METALS

Alexander J. Wurts

Vol. ix—1892, pp. 102-120

Account of experimental investigation with lightning arresters which resulted in the discovery of non-arcing metals and the development of lightning arresters based on this discovery.

Discussion, pp. 120-133, by Messrs. Thomas D. Lockwood, Charles E. Emery, A. J. Wurts, George B. Prescott, Jr., Joseph Wetzler, E. P. Thompson, E. E. Geyer, E. T. Birdsall, M. C. Sullivan, A. E. Kennelly and R. W. Pope.

General remarks on lightning protection and lightning arresters. Protection of telegraph lines.

SOME FEATURES OF ALTERNATING CURRENT SYSTEMS

Charles P. Steinmetz

Vol. xii—1895, pp. 326-349

Analytical study of power characteristics of single and polyphase circuits, leading up to the development of the monocyclic system of operation. Description of the monocyclic motor.

No discussion.

NOTES ON THE RECONSTRUCTION OF A SMALL CENTRAL STATION PLANT

Franklin L. Pope

Vol. xii—1895, pp. 454-468

Description of plant of Great Barrington Electric Light Company, and account of steps taken in remodeling it so as to make it pay. Interesting information on water wheel tests, line construction and street lighting systems.

Discussion, pp. 468-469, by Dr. Chas. E. Emery.

EXISTING COMMERCIAL APPLICATIONS OF ELECTRICAL POWER FROM NIAGARA FALLS

W. L. R. Emmet

Vol. xii—1895, pp. 482-492

Description of substation apparatus of Pittsburg Reduction Company and the Carborundum Company for transforming alternating current to direct current.

Discussion, pp. 492-499, by Messrs. Jules Neher, W. L. R. Emmet, Charles P. Steinmetz and L. B. Stillwell.

Factors entering into the design of synchronous converters for large current values.

PRESENT STATUS OF THE TRANSMISSION AND DISTRIBUTION OF ELECTRICAL ENERGY

Louis Duncan

Vol. xiii—1896, pp. 295-312

Review of current practice in the design and operation of generating plants, transmission lines and distribution systems for direct current and alternating current, followed by suggestions as to the possible limits of voltage and distance in transmission.

Discussion, pp. 312-323, by Messrs. C. P. Steinmetz, Townsend Wolcott, Robert Lamb, E. E. Ries, N. W. Perry, J. G. White and Louis Duncan.

General remarks on transmission and distribution.

ELECTRIC TRACTION

M. H. Gerry, Jr.

Vol. xiv—1897, pp. 353-375

Description of equipment of the Metropolitan Elevated Railroad, Chicago, followed by tests of the power requirements of trains. Train resistance, speed-time and motor performance curves. Efficiency of straight direct current distribution system at different loads.

Discussion, pp. 376-383, by Messrs. F. B. Crocker, F. A. C. Perrine, R. W. Pope, Elihu Thomson, Gano S. Dunn and C. P. Steinmetz.

Effect of train acceleration upon energy requirements.

POWER TRANSMISSION AND DISTRIBUTION FOR RAILWAY WORK

Ernst J. Berg

Vol. xv—1898, pp. 379-401

Analytical study of the voltage regulation in a railway distribution system, bringing out the effect of circuit constants upon the e. m. f. characteristics of generators and synchronous converters.

No discussion.

SOME TELEPHONE DISTURBANCES FROM ELECTRICAL GENERATORS

George D. Shepardson

Vol. xv—1898, pp. 443-460

Account of qualitative investigation of telephone disturbances caused by direct commutation in neighboring systems. Bibliography of telephone line disturbances from other circuits.

No discussion.

ALTERNATING CURRENT TRANSFORMERS—FROM THE STATION MANAGER'S VIEWPOINT

W. F. White

Vol. xv—1898, pp. 505-514

Presentation of the advantages of a single large transformer over a number of smaller ones. Experience as to the actual savings in favor of the single transformer.

No discussion.

AN ECONOMY TEST OF A CENTRAL STATION

W. E. Goldsborough

Vol. xv—1898, pp. 163-227

Description of the West Pratt Street Station of the Edison Electric Illuminating Company of Baltimore, followed by a complete description of comprehensive economy, tests, giving results in the form of tables and charts.

No discussion.

TWO WIRE DISTRIBUTING SYSTEMS AND LAMPS, 200-240 VOLTS

John W. Howell

Vol. xv—1898, pp. 331-336

Discussion of the advantages of 240-volt two wire system as compared with 120-volt three wire system.

Discussion, pp. 336, by Messrs. G. D. Shepardson and H. H. Humphrey.

THE PROTECTION OF SECONDARY CIRCUITS FROM FIRE RISKS

Cary T. Hutchinson

Vol. xvi—1899, pp. 407-417

Discussion of various methods of protecting secondary circuits in alternating current distribution system. Recommendation that the Institute pass a resolution favoring permission to ground the neutral of secondary circuits.

Discussion, pp. 417-430, by Messrs. Elihu Thomson, C. M. Goddard, W. E. Goldsborough, C. P. Steinmetz, Louis Bell, James I. Ayer, William Brophy, W. L. Puffer, C. W. Ries, W. J. Hammer and A. E. Kennelly.

Advantages of grounding secondary of distribution system.