10. STEAM BOILERS AND PRIME MOVERS

A THERMO-ELECTRIC METHOD OF STUDYING CYLINDER CONDENSATION IN STEAM ENGINE CYLINDER

Edwin H. Hall — **Vol. viii—1891, pp. 236-244**

Brief outline of indicator card method of studying cylinder condensation, followed by description of construction of thermo-couple, and its application to the study of temperature distribution in the cylinder walls. Observed temperature at different distances back from the interior surface.

Discussion, pp. 244-245, by Messrs. W. J. Hammer, W. E. Geyer, Edw. L. Nichols, and Edwin H. Hall and Geo. G. Geyer.

THE COST OF STEAM POWER PRODUCED WITH ENGINES OF DIFFERENT TYPES UNDER PRACTICAL CONDITIONS, WITH SUPPLEMENT RELATING TO WATER POWER

Charles E. Emery — **Vol. x—1893, pp. 119-147**

Detailed analysis of the cost of developing energy in various types of reciprocating steam engine plants, covering cost of machinery and its installation, and all fixed and operating charges.

Discussion, pp. 148-165 and 484-488, by Messrs. Frank J. Sprague, George Forbes, Samuel McElroy, J. F. Holloway, C. O. Mailloux, Charles E. Emery and L. B. Stillwell.

Figures on the actual cost of old hydraulic developments in New England. General remarks on the cost of hydroelectric plants.

THE VARIATION IN ECONOMY OF THE STEAM ENGINE DUE TO VARIATION IN LOAD

R. C. Carpenter — **Vol. x—1893, pp. 297-325**

Development of method of calculation of steam consumption in any type of steam engine operating under different conditions and at different loads, the steam consumption at most economical load being known. Formulas checked by actual tests on many different types of engines. Data and test results plotted as curves.

Discussion, pp. 326-330, by Messrs. Louis Duncan, R. C. Carpenter, F. A. C. Perrine and Charles E. Emery.

General remarks on Prof. Carpenter's formulas, their usefulness and their limitations.

NOTES ON RECENT ELECTRICAL ENGINEERING DEVELOPMENTS IN FRANCE AND ENGLAND

H. Ward Leonard — **Vol. xii—1895, pp. 36-53**

Account of observations of European practice in manufacturing and engineering, synchronous converters, steam engines, Parsons and DeLaval turbines, electric railways, central stations. Description of equipment and mode of operating and tests of Heilman self-contained electric locomotive.

Discussion, pp. 54-77, by Messrs. Townsend Wolcott, John W. Lieb, Jr., Chas. E. Emery, Herbert Lloyd, A. E. Kennelly, Wm. Maver, Jr., M. N. Forney, Cary T. Hutchinson, W. L. Bliss, Richard Fleming, Joseph Sachs, F. B. Crocker, E. J. Houston, H. Ward Leonard, B. J. Arnold, W. M. Stine, C. K. MacFadden, L. L. Summers and A. V. Abbott.

General data on Berlin central stations. Discussion of the Heilman locomotive performance and probable usefulness.

THE COST OF STEAM POWER

Charles E. Emery **Vol. xii—1895, pp. 358-370**

Factors which enter into the cost of electric energy produced from steam. Estimated cost of energy production at various load factors under the most favorable coditions. Analysis of cost of fuel, labor and repairs, showing the effect of various conditions thereon.

Discussion, pp. 371-387, by Messrs. W. A. Anthony, F. B. Crocker, R. W. Pope, Oberlin Smith, C. E. Emery, Joseph Wetzler, Peter Wright, L. B. Stillwell, B. J. Arnold, Harry Alexander, Nelson W. Perry and Allan V. Garratt.

General remarks on cost of producing electric energy and on competition of Niagara Falls electric energy with steam.

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 remodelling 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.

THE COST OF STEAM POWER

Horatio A. Foster **Vol. xiv—1897, pp. 385-415**

Analysis of the cost of energy production from steam engines in a number of plants including central stations, isolated plants and factories.

Discussion, pp. 416-421, by Messrs. F. B. Crocker, F. A. C. Perrine, R. W. Pope, R. B. Owens, Douglass Burnett and W. H. Ripley.

Relative calorific value of different kinds of coal.

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.

ELEMENTS OF DESIGN FAVORABLE TO SPEED REGULATION IN PLANTS DRIVEN BY WATER POWER

Allan V. Garratt **Vol. xvi—1899, pp. 361-394**

Outline of the fundamental theory of water turbine regulation. The effect of the design of the different elements in a turbine installation upon speed regulation, including penstocks, flumes, draft tubes, turbine gates, fly-wheels, etc.

Discussion, pp. 394-405, by Messrs. C. F. Hopewell, A. V. Garratt, W. S. Aldrich, C. W. Rice, C. P. Steinmetz, Louis Bell, W. E. Goldsborough, H. Ward Leonard, W. J. Hammer and S. L. G. Knox.

General remarks on turbine installation.