The History of the Electric Locomotive

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Contents

FOREWORD

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INTRODUCTION

II WORK OF EARLY PIONEERS AND INVENTORS

(The electric locomotive was invented and certain principles appeared from early days.) (1835-80) Strattingh, Becker, Davenport, Davidson, Green.

III LOCOMOTIVES DEVELOPED BETWEEN 1880 AND 1910

(The electric locomotive emerged as a practical proposition and was shown to be of use in urban and suburban transport, on mountain lines and for high speed work. In addition, the young and active electrical industry sought new fields of activity. A number of lines were electrified experimentally or for specific reasons and proved successful.)

Description of the work of well-known engineers:

Werner von Siemens, René Thury, Leo Daft, Stephen D. Field, Thomas Edison, Magnus Volk.

The Swiss Experiments on the Burgdorf-Thun and the Seebach-Wettingen Lines.— The work of Ganz & Co of Budapest.—The Zossen-Marienfelde Railway, and the 10,000 v. Tests by Siemens and AEG in Germany.—London Underground Railways. —Baltimore and Ohio Railroad.—St George-de-Commiers-La Mure Railway.—The Cascade Electrification of the Great Northern Railway of USA.—Boston and Maine Railroad (Hoosac Tunnel), Spokane and Inland Empire Railroad, and St Clair Tunnel (Grand Trunk Railroad).—Early Experiments in Sweden and Norway.—The Dessau-Bitterfeld experiments.—The Paris Lyons and Mediterranean-Alioth test Locomotive. —The electrification of the Simplon and Loetschberg Railways.

IV ELECTRIC LOCOMOTIVES FOR MAIN LINES BUILT BETWEEN 1910 AND 1935

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(The railways began to lose their land transport monopoly and had to improve their economic and technical position. Electrification appeared as a solution to these problems.) (Between 1915–35 major electrification schemes were carried out in Switzerland, Austria, Sweden, Great Britain, USA, France, Germany, India.)

Developments according to countries and railway lines.

- A. Locomotives of the Swiss Gotthard line.
- B. The French Midi Railway experiments and its locomotives.
- c. The experimental locomotive designs of Sir Vincent Raven and the North Eastern Railway of Great Britain.
- D. The electric locomotives of the Silesian Mountain railway lines in Germany.
- E. The Lapland Iron Ore line and other electrifications in Sweden and Norway.
- F. Electrification of the Austrian Alpine Railway and its locomotives.
- G. Electrifications in America.
- H. Great Indian Peninsular Railway Electrification, its locomotives and other Indian schemes.
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v MAIN LINE ELECTRIFICATIONS AFTER 1935

(The railways became part of an integrated transport system and had to be run as economically and socially justifiable units of such a system. Total electrification of their main lines appeared as a solution to these problems and took place in many countries.)

- A. Swiss Electric Locomotive Types since 1940.
- B. Electric Locomotive Work in France from 1939–66, and the 50 c/s Experiments in France, Hungary and Germany.
- c. Austrian Electric Locomotives.
- D. Minor Swiss Railway Electrifications
 - Bruenig Line—The Rhaetian Railway—Jungfrau Railway—Rorschach-Heiden Railway.
- E. American Electrification Work
 - Pennsylvania Railroad—Great Northern Railway—New York, New Haven and Hartford Railroad—New York Central Railroad—Virginian Railroad.
- F. Italian Electric Locomotives.
- G. Hungarian 50-cycle Electric Traction Experiments.
- н. The New Zealand Electrifications.
- I. New Locomotives for Sweden.
- J. New Japanese Electric Locomotives.
- к. Railway Electrification in Germany
 - The Inter-War Locomotives, about 1920–40.—The Post-War E.10 Prototype Experiments.—Other Post-War Locomotives.—Co—Co Locomotives, Series E.03 for 200 km./h.—New Electric Locomotives in East Germany.—The 50-cycle Locomotives of the Black Forest Electrification.
- L. New Electric Locomotive Types in Czechoslovakia.
- м. Electric Locomotives in Great Britain.
- N. Railway Electrification in South Africa.
- o. Spanish and Portuguese Electric Locomotives.
- P. Electric Locomotives in the Soviet Union.
- Q. Electric Locomotives in Holland and Belgium.
- R. Electric Locomotives in Turkey.
- s. Australian Electric Locomotives.
- т. Later Electric Locomotives in India.
- U. South American Electric Locomotives.

VI DEVELOPMENT OF THE ELECTRIC LOCOMOTIVE AND ITS COMPONENTS

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(The electric locomotive is continuously developing as a whole unit and also in every one of its components.)

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