

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

CONTENTS.

CHAPTER I.

The Village of Wylam. — Birthplace of George Stephenson. — His Parentage. — Race. — The Stephenson Family. — Wylam Waggon-way. — Dewley-Burn - - - - - Pp. 1—7

CHAP. II.

Is employed as a Herd-boy. — Models Clay Engines. — Labours a-field. — Drives the Gin-Horse at the Colliery. — Bird-nesting. — Is made Assistant Fireman. — Jolly's Close. — Athletic Feats. — Is appointed Engineman. — Study of the Steam-engine - - - - - 8—15

CHAP. III.

Newburn. — Experiments in Artificial Bird-hatching. — Puts himself to School and learns to Read and Write. — Learns Arithmetic. — Love of tame Birds and Animals. — His Dog Messenger. — Learns Engine-brakeing - - - - - 16—22

CHAP. IV.

Brakesman at Black Callerton. — Duties of the Brakesman. — Wages. — Ekes out his Earnings by Shoe-mending. — Falls in Love. — Saves his First Guinea. — Sobriety. — Quarrel and Fight with Ned Nelson - - - - - 23—28

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

x

CONTENTS.

CHAP. V.

Removal to Willington. — Marriage. — Attempts to invent Perpetual Motion. — Makes Shoes and Shoe Lasts. — Clock-cleaning. — Birth of his Son. — Removal to Killingworth - - - - Pp. 29—34

CHAP. VI.

Killingworth Colliery. — Death of his Wife. — Journey into Scotland. — Appointed Brakesman at Killingworth. — Intends emigrating to the United States. — Takes a Contract for Engine-brakeing. — Makes Improvements in Pumping Engines, and acquires Celebrity as a Pump-curer - - - - - 35—46

CHAP. VII.

Self-improvement. — His Studies with John Wigham, the Farmer's Son. — Sends his Son to School. — The Cottage at West Moor. — Ingenuity of his Contrivances. — Is appointed Engine-wright of the Colliery. — Erects his First Engine. — Evening Studies. — His Obligations to the Newcastle Literary Institute - - - - - 47—57

CHAP. VIII.

The Beginnings of Railways and Locomotives. — Early Tramroads. — Speculations as to mechanical Methods of Traction. — Cugnot's Model Locomotive. — Symington's Model. — Murdoch's Model. — Trevethick's Steam-carriage and Locomotive. — Blenkinsop's Engine. — Mr. Blackett's Experiments at Wylam - - - - - 58—80

CHAP. IX.

Mr. Stephenson contemplates building a Locomotive. — Is encouraged by Lord Ravensworth. — Want of competent Mechanics. — Mr. Stephenson's First Locomotive described. — Successful Application of the Steam Blast. — His Second Locomotive. — Summary of the important Results effected - - - - - 81—94

CHAP. X.

Fatal Accidents from Explosions in Coal Mines. — Blasts in the Killingworth Pit. — Mr. Stephenson's Experiments with Fire-damp. — Contrives the First practicable Miners' Safety Lamp. — Its Trial in the Killingworth Pit. — Further Experiments and Improvements on the Lamp. — Exhibited at Newcastle - - - - - 95—110

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

CONTENTS.

xi

CHAP. XI.

The Invention of the Tube Lamp. — Mr. Stephenson charged with Pirating Sir H. Davy's Idea. — His Reply. — Dates of the respective Inventions. — Controversy on the Subject. — Testimonials presented to both the Inventors. — Summary of Evidence as to the Invention of the Lamp - - - - - Pp. 111—132

CHAP. XII.

Further Improvements in the Locomotive. — Invents an improved Rail and Chair. — Invents Steam Springs. — Experiments on Friction and Gravity. — Views on Flat Gradients. — Superiority of Iron Roads over Paved Roads - - - - - 133—144

CHAP. XIII.

His Self-education continued. — Views on Education. — The Sun-dial at Killingworth. — Apprentices his Son as Underviewer at the Colliery. — Sends him to Edinburgh University - - - - - 145—163

CHAP. XIV.

Slow Progress of Opinion as to Railway Locomotion. — Sir Richard Phillips's Prophetic Anticipations. — William James. — Edward Pease, Projector of the Stockton and Darlington Railway. — Thomas Gray. — Mr. Stephenson constructs the Hetton Railway - - - - - 154—172

CHAP. XV.

Defective Communication between Liverpool and Manchester. — A Tramroad projected. — Mr. James surveys a Line. — Visits Mr. Stephenson at Killingworth. — Is admitted to an Interest in the Patent Locomotive. — Fails in introducing it. — Fails to produce his Plans of the Liverpool Tramroad - - - - - 173—181

CHAP. XVI.

Mr. Stephenson's Introduction to Mr. Pease. — Is appointed Engineer to the Stockton and Darlington Railway. — Makes a new Survey. — Proposed Employment of Locomotives. — Fixed Engines advocated. — Mr. Pease visits Killingworth - - - - - 182—189

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

xii

CONTENTS.

CHAP. XVII.

Working Survey of the Stockton and Darlington Line.—Locomotive Factory at Newcastle commenced.—Wrought-iron Rails adopted.—The Gauge of the Railway settled.—The Tractive Power to be employed.—Anticipations of Railway Results.—Public Opening of the Line.—The “Experiment.”—Rival Coach Companies.—Race between Locomotive and Coach.—Results of the Traffic.—Creation of Middlesborough-on-Tees - - - Pp. 190—207

CHAP. XVIII.

Project of the Liverpool and Manchester Railway revived.—The Canal Companies' Opposition.—Provisional Committee formed.—Their Visits to Killingworth.—Mr. Stephenson appointed to Survey a Line.—Difficulties encountered.—Articles in the “Scotsman” and “Quarterly” on Railways - - - - 208—223

CHAP. XIX.

The Liverpool and Manchester Bill in Committee of the House of Commons.—Mr. Stephenson in the Witness-box.—Mr. Giles proves the Impossibility of forming a Railway over Chat Moss.—Mr. Stephenson's Ignorance denounced by the Counsel for the Opposition.—Mr. Adam's Appeal.—Defeat of essential Clauses, and Withdrawal of the Bill - - - - 224—243

CHAP. XX.

Renewed Application to Parliament for the Liverpool and Manchester Bill.—Messrs. Rennie selected as Parliamentary Engineers.—Passing of the Act.—Mr. Stephenson appointed Chief Engineer.—The Drainage of Chat Moss.—The Directors contemplate the Abandonment of the Work.—Mr. Stephenson's Perseverance.—His Organisation of Labour.—The Railway Navy.—Progress of the Works.—Private Life and Habits at Liverpool - - - 244—264

CHAP. XXI.

General Opposition to the Locomotive.—Mr. Telford's Report.—Variety of Schemes suggested for the working of the Liverpool and Manchester Railway.—Messrs. Walker and Rastrick's Report in favour of fixed Engines and against the Locomotive.—The Directors offer a Prize of 500*l.* for the best Engine - - - 265—276

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

CONTENTS.

xiii

CHAP. XXII.

The Newcastle Locomotive Foundry. — Robert Stephenson's Return from America. — Rencontre with Trevethick. — The Building of the "Rocket." — Contrivance of the Multi-tubular Boiler. — Modification of the Blast-pipe. — The "Rocket" finished and sent to Liverpool - - - - - Pp. 277—289

CHAP. XXIII.

The Locomotive Competition at Rainhill. — Entry of Engines for the Prize. — The Judges appointed. — The "Rocket" stript for the Race. — The "Novelty." — The "Sans-pareil." — The performances of the "Rocket." — Wins the Prize. — Congratulations of Mr. Stephenson. — The End of the "Rocket" - - - - - 290—297

CHAP. XXIV.

Completion of the Liverpool and Manchester Line. — The Public Opening. — Fatal Accident to Mr. Huskisson. — Lord Brougham's Panegyric of the Railway. — Commercial Results of the Undertaking. — Further Improvements in the Locomotive. — Alleged Monopoly. — The Workmen employed. — Improvement of the Road and Rolling Stock - - - - - 298—313

CHAP. XXV.

Importance of Mr. Stephenson's Invention of the Passenger Engine. — Government and Railways. — Joint Stock Companies. — New Railways projected and made. — The London and Birmingham Railway. — The Kilsby Tunnel. — Excess in the Cost of Construction beyond the Estimates. — Magnitude of the Works. — Comparison with the Great Pyramid - - - - - 314—335

CHAP. XXVI.

Advance of Public Opinion in favour of Railways. — Singular Instances of Opposition to Railways and Predictions of Failure. — Locomotion on Common Roads promoted by the Legislature. — Results of the Opening from London to Liverpool, &c. — Benefits to the Public. — Travelling by Stage coach and Private Carriage. — Mr. Stephenson in a Stage-Coach Accident. — The Railway at length adopted by all Classes - - - - - 336—350

CHAP. XXVII.

Leases the Snibston Estate. — Discovery of Beds of Coal. — Private Life at Alton Grange. — Busiest Period of Mr. Stephenson's Career. — Anecdote of the Starved Robins. — Lines in the Northern and Midland Districts. — The Manchester and Leeds. — Lord Wharnccliffe's Opposition in Committee. — The Littleborough Tunnel. — The North Midland. — Comparison of the Works with Napoleon's Road across the Simplon. — Mr. Stephenson's Anticipations as to the Coal Traffic to London by Railway. — The York and North Midland. — Public Opening. — The Sheffield and Rotherham. — Mr. Stephenson's Pupils and Assistants - - - - - Pp. 351—378

CHAP. XXVIII.

Surveys an East Coast Line to Scotland. — Line from Chester to Holyhead. — West Coast Line to Glasgow. — Leeds and Bradford. — Rapidity of Railway Development. — Is checked by the Monetary Pressure - - - - - 379—389

CHAP. XXIX.

The Modern School of English Engineers. — Fast Men. — History of the Narrow Gauge. — Increased Width on the Great Western. — Mr. Brunel. — Battle of the Gauges. — The Atmospheric Railway. — The Undulating System. — Notions of Fast Travelling. — Mr. Stephenson invents a Railway Safety-brake. — His moderate Views of Railway Speed, &c., compared with those of the Fast Men. — Commercial Considerations - - - - - 390—407

CHAP. XXX.

Mr. Stephenson resigns the Chief Engineership of several Railways. — Residence at Tapton in Derbyshire. — Leases Clay Cross and Tapton Collieries — Proposed Testimonial. — Sir Robert Peel's Allusion to his useful Career. — His Interest in Mechanics' Institutes. — Chairman of Yarmouth and Norwich Railway. — Completion of the East Coast Route to Newcastle. — Public Celebration of the Event. — Autobiographic Sketch. — The Proposed Northumberland Atmospheric Line. — The Newcastle High-level Bridge - - - - - 408—425

CHAP. XXXI.

Railway Management. — Railway Success stimulates Speculation. — Multitude of new Projects. — Sale of Premiums of new Shares on

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

CONTENTS.

xv

'Change. — The Railway Mania. — Mr. Stephenson holds aloof from and discountenances it. — Immense Number of New Lines authorised by Parliament. — Sir Robert Peel's Encouragement of direct and uneven Lines. — Mr. Stephenson's Letter of Expostulation. — Legislative Bungling. — Great Waste of Capital. — Demoralising Effects of the Mania. — The Navy as a Contractor. — Mr. Stephenson's Mode of executing Railway Works - - - - Pp. 426—443

CHAP. XXXII.

Introduction to Mr. Hudson. — His Railway Career. — The Railway King. — Acknowledgment of Mr. Stephenson's Services. — Public Statue proposed. — Mr. Hudson's Appropriation of Shares. — Results of the Railway Saturnalia. — Mr. Hudson dethroned - - - - 444—452

CHAP. XXXIII.

The Railway System early adopted by Leopold, King of the Belgians. — Mr. Stephenson consulted in the laying out of the Belgian Railways. — Is made Knight of the Order of Leopold. — Journeys of Railway Inspection in Belgium. — Banquet at Ghent and Brussels. — Interview with the King. — Visit to France and Spain. — Illness and Return to England - - - - - 453—464

CHAP. XXXIV.

Horticultural Pursuits at Tapton. — His Pines, Melons, and Grapes. — Makes Cucumbers grow straight. — Stock-feeding. — Theory of Vegetation. — Fattening of Chickens. — Bees. — Indoor Habits. — Conversible Faces; Lord Denman. — Visits of Friends. — Reverence for Nature. — The Microscope. — Spirit of Frolic. — A "Crowdie Night." — Humble Visitors. — Rebukes Foppery. — Visits to London and Newcastle. — Visit to Sir Robert Peel at Drayton. — The Clay Cross Workmen's Institute - - - - - 465—478

CHAP. XXXV.

Correspondence with Inventors. — Invents a Three-cylinder Locomotive. His self-acting Carriage-brake. — Public Opening of the Trent Valley Railway. — Railway Celebration at Manchester. — Meeting with Emerson. — Illness and Death. — Tribute of the London and North Western Railway Company to his Memory. — Statues. — Portrait. - - - - 479—492

Cambridge University Press

978-1-108-05273-3 - The Life of George Stephenson Railway Engineer

Samuel Smiles

Table of Contents

[More information](#)

xvi

CONTENTS.

CHAP. XXXVI.

Character of George Stephenson. — Race. — Self-reliance. — Improvement of Time. — Perseverance. — Encounter with Difficulties. — Thoroughness. — Determination. — Attention to Details. — Care for his Son's Education. — Admiration inspired by him. — Generosity. — Honest Thrift. — Patience. — Comparison with Watt. — Manners and Deportment. — Close Observation of Facts. — Hatred of Humbug. — "Ornamental Initials." — The Civil Engineers. — Offer of Knighthood. — Conclusion - - - - - Pp. 493—507

RÉSUMÉ OF THE RAILWAY SYSTEM AND ITS RESULTS.

BY R. STEPHENSON, Esq., M.P.

Length of Railways in Great Britain. — Cost. — Works. — Working. — Traffic. — Wear and Tear. — Fares. — Postal Facilities afforded by Railways. — Legislation for Railways. — Management of Railways. — Electric Telegraph. — Accidents. — General Results. — Practical Application - - - - - 511—546