THE LIFE

OF

ROBERT STEPHENSON.

VOL. I.

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THE LIFE

OF

ROBERT STEPHENSON, F.R.S.

ETC. ETC.

LATE PRESIDENT OF THE INSTITUTION OF CIVIL ENGINEERS.

BY

J. C. JEAFFRESON

BARRISTER-AT-LAW.

WITH DESCRIPTIVE CHAPTERS ON

SOME OF HIS MOST IMPORTANT PROFESSIONAL WORKS

BY

WILLIAM POLE, F.R.S.

MEMBER OF THE INSTITUTION OF CIVIL ENGINEERS.

IN TWO VOLUMES.

VOL. I.

LONDON:
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1864.

PREFACE.

FOUR YEARS have elapsed since with Professor Pole I undertook to write the Life of ROBERT STEPHENSON.

A careful examination of the many published works which, either specially or incidentally, treat of the labours of the two Stephensons, was amongst the first steps which I took towards the performance of my task. I read critically a large number of scientific volumes, biographies, lectures, and articles bearing upon the history of the locomotive, upon the art of building bridges, and upon the careers of the men who, during the last sixty years, have brought our railway system to its present state of efficiency. My surprise was great at finding that the statements of the various treatises were irreconcilable.

In the summer and autumn of 1860 I passed some time in Northumberland and Durham, collecting materials for this work from the oral communications of Robert Stephenson's numerous relations, from the reminiscences of men who had been the companions or the patrons of both the Stephensons, and from entries in

parish registers, and the account-books of collieries and factories. I was fortunate in meeting with cordial response from all of the many persons whose assistance was solicited. The result of these enquiries was the discovery that many mistakes had been made in telling the story of the elder Stephenson's life, and that no life of the younger Stephenson would be complete that should neglect to give a correct account of the misapprehended passages in the life of the elder. The only course, therefore, open to me was to re-write the Life of George Stephenson, so far as it affected Robert Stephenson's career, and to tell the whole truth of the son's life to the best of my ability.

On my return from the North of England I gathered documentary materials from many different quarters, and ere long I was fortunate enough to bring together a mass of evidence which the representatives of Robert Stephenson did not know to be in existence. Besides letters submitted to my perusal by a great number of the engineer's friends, and besides papers sent to me by his executors, I obtained custody of several important collections of documents. Mr. Longridge put into my hands the Stephenson papers which his father preserved. Mr. Illingworth allowed me to peruse his South-American papers. Mr. Charles Empson, shortly before his death, contributed to my store of materials a most interesting collection of letters and documents; consisting of Robert Stephenson's early journals, and of nearly all the letters which he either received *from* or had written *to* friends

or relations, between the termination of his life on Killingworth Moor and his return from South America. I have also to acknowledge the assistance of Mr. George Parker Bidder, late President of the Institution of Civil Engineers; Mr. Charles Manby, F.R.S.; and Mr. George Robert Stephenson, C.E.

In expressing my thanks to the gentlemen who have assisted me with information or papers, I render no mere formal act of courtesy. Gratitude is a solemn duty when acknowledgment has to be made of services conferred by those who no longer tarry in the ways of men. Of those to whom I am indebted for facts or counsel, many have passed to another world. Mr. Losh and Mr. Weallens of Newcastle, Mr. Kell of Gateshead, Mr. Charles Empson of Bath, Admiral Moorsom, and Mr. Charles Parker, are amongst those who will never see this page.

J. CORDY JEAFFRESON.

THE TASK of describing some of the more important professional subjects which occupied the attention of Robert Stephenson has been confided to me. There was some difficulty in determining what subjects should be chosen, for many of his works were so mixed up with the current events of his life, that they could scarcely be separated from the narrative of his biography.

I determined, finally, to select the Atmospheric system of Railway Propulsion, and the great Iron Railway Bridges erected by him.

The length at which I have treated the former of these subjects demands some explanation, inasmuch as Robert Stephenson, far from promoting the Atmospheric system, was always one of its strongest opponents. But judges on whom I can fully rely were of opinion that it deserved a prominent place in his life, as well from the great interest he took in it, as from the extent to which it must have affected the whole course of Railway engineering. The facts of its history, with the results and lessons to be drawn from it, seemed likely soon to be forgotten, and were considered worthy of being put fully on record.

The preliminary chapter on Iron Bridges has been written in order to bring out more clearly the peculiarities and merits of the magnificent structures of this kind, to which probably Robert Stephenson will eventually owe his widest fame.

I have to acknowledge information kindly supplied by many friends in the profession.

The chapters which I have contributed to the work are XIV. in Vol. I., and II., III., IV., VIII., in Vol. II.

WILLIAM POLE.

LONDON: *September* 1864.

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THE LIFE

OF

ROBERT STEPHENSON.

CHAPTER I.

THE STEPHENSON FAMILY.

Various Stephensons of Newcastle — 'Old Robert Stephenson' — Mabel Carr — George Stephenson's Birth — Fanny Henderson — George Stephenson moves to Willington — Robert Stephenson's Birth — The Christening Party at Willington Quay — Mrs. George Stephenson's delicate Health — George Stephenson removes to Killingworth Township, Long Benton — Site of George Stephenson's House at Willington — 'The Stephenson Memorial.'

THE records of Newcastle show that the name of Stephenson has been frequent in every rank of the town for the last two hundred and fifty years. But no attempt has ever been made to establish a family connection between the subject of this memoir and the many worthy citizens of Newcastle who, in the seventeenth and eighteenth centuries, bore the same name. A gentleman of high attainments, residing in the neighbourhood of Newcastle, in answer to enquiries for ancestors

in the male line of George Stephenson, stated that George Stephenson on a certain occasion said that his family were natives of Castleton, in Liddisdale, and that his grandfather came into England in the service of a Scotch gentleman.

There is no doubt that the grandfather of the greatest engineer of the present century lived and toiled and died in humble circumstances. He worked as fireman to the engines of the various colliery pits in the neighbourhood of Wylam, till an accident deprived him of sight and rendered him dependent on others for his daily bread. Gentle beyond the wont of rude North-countrymen, and fond of spinning out long stories of adventure and romance to village children, he was known as 'Bob the story-teller.' He is now remembered by the few of his associates who linger on the earth as 'Old Robert Stephenson.' In early life he married Mabel, the daughter of George Carr, a bleacher and dyer of Ovingham, a village standing on an ascent which rises from the north bank of the Tyne, and faces the ancient ruins of Prudhoe Castle, that crown the hill on the opposite bank. The maiden name of Mabel Carr's mother was Eleanor Wilson. Eleanor was the daughter of a wealthy Northumbrian yeoman, who possessed a good estate in the parishes of Stocksfield and Bywell. Indignant at her marriage with the bleacher and dyer of Ovingham, Mr. Wilson turned his back upon her, and died without bequeathing her a penny.

By his wife Mabel 'Old Robert Stephenson' had four sons (James, George, Robert, and John) and two daughters (Eleanor and Ann). James, the eldest son, closely resembled his father; but George, Robert, and

John, were all shrewd and observant men, self-reliant and resolute.

Born June 9, 1781, George Stephenson could neither write nor read when he had attained the age of eighteen years. Up to that age he displayed no signs of unusual intelligence, but he had always been a good, sober, steady lad. Like most pit-children, he used to grub about in the dirt, and for his amusement fashion models of steam-engines in clay. From his earliest years, also, he kept as pets pigeons, blackbirds, guinea-pigs, and rabbits; an almost universal trait amongst the colliery labourers of the Newcastle field.

In 1801, he became brakesman of the engine of the Dolly Pit, in Black Callerton, and lodged in the house of Thomas Thompson, a small farmer of that parish. George Stephenson was at that time a light-hearted young fellow, famous for practical jokes, and proud of his muscular power. At this period, also, he acquired the art of shoe-cobbling.

The most important farmer of the parish was Mr. Thomas Hindmarsh, who occupied land which his ancestors had farmed for at least two centuries. To his grave displeasure, his daughter Elizabeth accepted the addresses of the young brakesman, giving him clandestine meetings in the orchard and behind the garden-fence, until such effectual measures were taken as prevented a repetition of the suitor's visits. Elizabeth, however, remained faithful to the lover, whom her father drove from his premises, and she eventually became his second, but not his last, wife.

George Stephenson took this disappointment lightly. He soon fixed his affections on Ann Henderson, daughter

of John Henderson, a small and impoverished farmer, near Capheaton. Like her two sisters Hannah and Frances (who were the female servants in Thomas Thompson's house) Ann was a domestic servant. At first she seemed well pleased with her lover, who, amongst other attentions, paid her one which deserves a few passing words.* Observing that her shoes wanted to be re-soled, he begged leave to mend them, and, the permission being granted, he not only repaired them, but boastfully displayed them to his companions. His triumph, however, was of short duration; for on returning the shoes to Ann, with a request for a warmer acknowledgement of his services than mere thanks, he was informed by her that he wooed where he could never win.

This second rejection was for a time deeply felt, but he concealed his chagrin, and then made up his mind that, since he could not have Ann, he would try his luck with her sister Fanny.

Fanny Henderson had for years been a servant in the house where George Stephenson was a lodger. When Thomas Thompson, more than ten years before, took the farm from the outgoing tenant, George Alder, she came into his service as part of the concern, with the following character: —

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* Mr. Pattison, the nephew of Ann Henderson, and son of Elizabeth Henderson (who married Thomas Pattison, a tenant farmer of Black Callerton), writes thus: 'The pair of shoes mentioned in the "Life of George Stephenson," as having been made for Fanny Henderson, afterwards his wife, were not for her, but for her sister Ann, whom he ardently admired; but not succeeding with her, he said he would have one of the family, and he turned his attention to Fanny.' Mr. Pattison, the author of this statement, is employed in the factory of Messrs. Robert Stephenson and Co., Newcastle. His statement is corroborated by all the members of his mother's respectable family.

Black Callerton: April 10, 1791.

The bearer, Frances Henderson, is a girl of a sober disposition, an honest servant, and of a good family, as witness my hand,

GEORGE ALDER.

She was no longer young, and it was the village gossip that she would never find a husband. As a girl, she had plighted her troth to John Charlton, the village schoolmaster of Black Callerton, but their long engagement was terminated in 1794 by the young man's death, when she was in her twenty-sixth year. She was therefore George's senior by twelve years; but it was not for her to object to the disparity of their ages, since he was willing to marry a woman so much older than himself. So, to the good-natured amusement of neighbours, and to the vexation of Ann Henderson, who did not enjoy the apparent unconcern with which her lover had passed from her to her old maid sister, George Stephenson was married at Newburn church on November 28th, 1802, to Fanny Henderson, the mother of the subject of this memoir.

Mr. Thomas Thompson gave the wedding breakfast to his faithful domestic servant and his young lodger, and signed his name in the parish register, as a witness of the marriage ceremony. George Stephenson had at that time so far advanced in the art of writing, that he was able to sign his own name (and his wife's maiden name also — if handwriting may be trusted as evidence on such a point) on the certificate. The signature is blurred — possibly by the sleeve of his coat, as he stretched out his pen for another dip of ink before acting as his wife's secretary; but the handwriting is legible, and is a good specimen of George Stephenson's caligraphy.

For a short time after his marriage George Stephenson continued to reside at Black Callerton, lodging with his wife in a cottage not far from the Lough House, as Mr. Thomas Thompson's residence was called. This arrangement, however, did not last long. While he was acting as brakesman at Black Callerton, his father and his brothers James and John continued to work at Walbottle colliery, where the engineer was Robert Hawthorn, the ingenious and enterprising man whose sons still carry on the important locomotive factory at Newcastle that bears their name. At the opening of the present century, Robert Hawthorn, then known as one of the best enginewrights in the Newcastle country, erected the first ballast machine that ever worked on the banks of the Tyne. This machine was erected at Willington Quay (a station on the river side, about six miles below Newcastle), and was placed upon the quay, on the edge of the river.* When the work was completed, Hawthorn exerted his influence in favour of the Dolly Pit brakesman, the consequence of which was, that the latter quitted Black Callerton (situated a few miles above Newcastle), and became the brakesman of the Ballast Hill engine. It was while he held this appointment that George Stephenson first set up as a housekeeper on his own humble account—that is to say, first bought bedding and such modest furniture as he required for

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* It has been represented that this machine was placed on the summit of the Ballast Hill. The Messrs. Hawthorn, however (the sons of the contractor), who remember well both the engine and the incline, say that the former was near the water. 'If,' say these gentlemen, 'the machine had been erected on the open Ballast Hill, it would have been buried up.'

two rooms in a cottage stationed hard by the engine on Willington Quay.* As everything connected with the career of this remarkable man is interesting, it is worthy of mention that at the time of his marriage he had not saved sufficient money to buy the upholstery and fittings of his new home. In marrying Fanny Henderson, however, he had, in a pecuniary sense, bettered himself. When they mounted the horse which Mr. Burn of the Red House farm, Wolsingham, put at their service, and made their progress from their furnished lodgings at Black Callerton to their new domicile on the other side of Newcastle, George had in his pocket a handsome number of gold pieces — the savings of his careful wife during long years of domestic service. A portion of this money was expended on household goods, the rest being laid by against a rainy day.

Marriage made a great difference in George Stephenson, and on settling at Willington he applied himself earnestly to the work of self-education. On October 16th, 1803,* his wife gave birth to a son, who was christened Robert: the ceremony was performed in the Wallsend school-house, as the parish church was unfit for use. The sponsors were Robert Gray and Ann Henderson, but they were by no means the only guests at the christening. Proud of being a father, George called together his kinsmen from the Wylam and Newburn districts, and gave them hospitable entertainment. His father, mother, and brothers answered the summons. So Robert Stephenson was received into the family with

* Robert Stephenson stated that he was born in the month of November, and his birthday was always celebrated at that time; but the extract from the register proves his birth to have been in October.

all honour, being named, according to north-country fashion, after his grandfather, and having long life and health and success drunk to him in sound ale and Scotch whisky. But the uncles and aunts who were present at the festivities remarked that the babe was 'a wee sickly bairn not made for long on this earth.'

Delicate the child both was and remained until he had made several years' entry into manhood. From his father he inherited strong thews and a strong will; but from his mother's blood there was a taint imparted to what otherwise would have been a magnificent constitution. The disease — consumption — which carried off John Charlton, now made insidious advances on Mrs. Stephenson; and her husband, whilst he was still only two and twenty years old, saw his life darkened by the heaviest misfortune that can befall a poor man — an invalid wife. In this respect his career sadly resembled the lot of his father, and years afterwards it was mournfully reproduced in the experiences of his only son.

But the young father was not the man to crouch at the first blast of adversity. If his wife could not help him, the more reason that he should help himself. He worked steadily at his engine during the appointed hours, and employed his evenings in shoemaking and cobbling and in acquiring the rudiments of mechanics. Whilst he was spelling out the secrets of his books, and often as he worked, hammer in hand, he relieved his sickly wife by taking his son from her cough-racked breast and nursing him for hours together. Robert's earliest recollections were of sitting on his father's knee, watching his brows knit over the difficult points of a page, or marking the deftness and precision with which

his right hand plied its craft. The child, too, bore in body as well as heart a memorial of his father's tenderness. His seat was always on George's left knee, his body encircled by his father's left arm. The consequence was that the left hand and arm, left at liberty by the position, became stronger and were more often used than the right; and the child's habit of trusting the left hand, strengthening with time, gradually developed into a permanent defect.

George Stephenson did not remain long at Willington, but his brief residence on the quay side was marked by other incidents besides the birth of his child. It was there that his intercourse with Robert Hawthorn first took the form of personal intimacy. It was at Willington, too, that he first took to clock-mending and clock-cleaning as an additional field of industry. The pit-man's cabin has points by which it may be distinguished from the southern peasant's cottage. Its prominent article of furniture is a good and handsome bed. Not seldom a colliery workman spends ten, or fifteen pounds on his bedstead alone, and when he has bought the costliest he can afford he places it in the middle of his principal apartment. Invariably he has also a clock—usually a valuable one—amongst his possessions. Every village, therefore, abounds in clocks, and as the people are very particular and even fanciful about them, a brisk business is everywhere carried on by clock-cleaners. Each petty district has its own clock-cleaner, who is supported by all the inhabitants; and it is to be observed that this artificer almost invariably has been self-taught.

George Stephenson, therefore, in occupying his spare

time in cleaning clocks, did only what the superior and more intelligent workmen of his time and country were in the habit of doing. His new employment was lucrative, and enabled him, for the first time in his life, to lay by money out of his own earnings.

Recent circumstances have connected the Stephensons in the public mind with Willington; but their relations with that township were neither lasting nor intimate. Scarcely had George Stephenson formed attachments to his neighbours when he moved to the parish of Long Benton, where he was engaged as brakesman of the West Moor colliery engine. On receiving his new appointment, George, now twenty-three years old, with his wife and little Robert (then in his second year), settled in a cottage in Killingworth township, close to the West Moor colliery—about four or five miles to the north of Newcastle, and about the same distance from Willington Quay.

The cottage in which George Stephenson lived on Willington Quay has been pulled down, but before it was destroyed the public interest attaching to it was so great, that photographic pictures and engravings of it had been circulated in every direction. The site, however, of Robert Stephenson's birthplace is appropriately preserved. Of the objects which arrest the attention of a person making the passage up the river from Tynemouth to Newcastle, there is nothing of greater architectural merit than the Gothic edifice that stands out upon Willington Quay. This structure, generally spoken of as the 'Stephenson Memorial,' comprises (besides rooms for officers and teachers) two school-rooms, one for boys and another for girls, and a reading-room

for mechanics. The entire building is a model of what such a structure ought to be, and the children's play-grounds are as spacious and well-appointed as the interior of their excellent institution. The exact spot on which the Stephenson cottage stood, is now the boys' play-ground, in the rear of the school.

CHAPTER II.

LONG BENTON.

(ÆTAT. 1-9.)

The West Moor Colliery—'The Street' of Long Benton—Road from Newcastle to Killingworth—'The Cottage' on the West Moor—View from the Cottage Windows—Apparent Amendment of Mrs. Stephenson's Health—Robert and his Mother visit Black Callerton—Robert Stephenson's Sister—Death of his Mother—George Stephenson's Journey to Montrose—Eleanor Stephenson—Her great Disappointment—'The Artificials'—Little Robert's Visits to the Red House Farm, Wolsingham—'The Hempy Lad'—Tommy Rutter's School—The young Gleaner—A Lesson for the Lord's Day—George Stephenson's Sundays—His Friends, Robert Hawthorn and John Steele—The first Locomotive ever built on the Banks of the Tyne—Anthony Wigham—Captain Robson—Evenings at the West Moor.

TOWARDS the close of 1804, George Stephenson moved to the West Moor colliery, and fixed himself and family in the little cottage where he resided, till he made rapid strides to opulence and fame. Long Benton,* a wide straggling parish, comprising in its five townships numerous colonies of operatives, presents those contrasts of wealth and poverty for which mining and manufacturing districts are proverbial. The long irregular street of the village is not without beauty. The vicarage

* In this parish Smeaton, in 1772, erected the large atmospheric engine, which formed the standard engine before Watt's improvements.—W. P.

is a picturesque dwelling, and on either side of the road, surrounded by gardens, with paths of crushed slag and refuse coal, and plantations of a somewhat sooty hue, are the houses of prosperous agents and employers. The general aspect of the place, however, is humble, and the abodes of the poorer inhabitants are comfortless.

The road from Newcastle to Long Benton quits the town at the northern outskirt, and, leaving 'the moor' on the left, passes through the picturesque plantations of Jesmond Vale (watered by the brawling Dean that flows to Ouseburn), and, having ascended the bold and richly wooded sweep of Benton Banks, leads on over a bleak and unattractive level to Long Benton, where art and nature again combine to render the landscape attractive. Pursuing its course down the disjointed village, the road descends to the church, where it turns to the left over a rustic stone bridge, curves round a corner of the churchyard, and bears away to Killingworth township and the West Moor colliery.

The cottage in which the young brakesman and his middle-aged wife settled, was a small two-roomed tenement. Even as it now stands, enlarged by George Stephenson to the dignity of a house with four apartments, it is a quaint little den — a toy-house rather than a habitation for a family. The upper rooms are very low, and one of them is merely a closet. The space of the lower floor is made the most of, and is divided into a vestibule and two apartments. Over the little entrance door, in the outer wall, is a sun-dial, of which mention will be made hereafter. The principal room of the house is on the left hand of the entrance, and in it stands to this day a piece of furniture which is now the property of Mr. Lancelot Gibson, the

hospitable occupant of the cottage. This article of furniture is a high strong-built cheffonier, with a book-case surmounting it, and it was placed in the apartment by George Stephenson himself. Of this chattel mention will be made elsewhere in these pages.

The view from the little garden, in front of this cabin, is as fine as any in the neighbourhood of Newcastle. A roadway leading to the North Shields turnpike road runs along the garden rails; on the other side of the road is a small paddock, not a hundred yards in width, beyond the farther confine of which are the mud walls of the glebe farmhouse, of which George Stephenson's friend Wigham was tenant. On the right hand, buried in trees, is Gosforth Hall, formerly the residence of the Mr. Brandling who fought George's battle in the matter of the safety lamp, and whose name — though he has long been dead — is never mentioned by the inhabitants of the district without some expression of affectionate regard. Newcastle cannot be seen; but clearly visible is the blue-hill ridge beyond it, on the farther decline of which rests the seat of the Liddells—Ravensworth Castle.

The excitement of moving to Killingworth was for a time beneficial to Mrs. Stephenson's health. She became more cheerful; and, that she might have every chance of amendment, George Stephenson prevailed on her to visit her sister Elizabeth, who had married Thomas Pattison, a farmer of Black Callerton.

This apparent improvement in health, which her husband attributed altogether to the excitement of moving to a new home, was, however, little more than the ordinary consequence of pregnancy, which is well known to stay for a brief space the treacherous incursions of

phthisical malady. In the July of 1805 she was put to bed, and Robert Stephenson had a sister who lived just three weeks *— long enough to be named Frances after her mother, to be admitted into Christ's Church, and to taste something of human suffering. Her little girl born, dead, and buried, the bereaved mother relapsed into her previous condition. The cold winter and spring, with its keen north-eastern winds sweeping over the country, completed the slow work of consumption, and before Benton banks and Jesmond vale had again put forth their green leaves, she was quiet in her last earthly rest in Benton churchyard.

Deprived of his mother, before he had completed his third year, Robert Stephenson was placed under the care of the women who were successively George's housekeepers. Of the three housekeepers who lived in the West Moor cabin, the first and last were superior women. Soon after the death of his wife, George Stephenson went for a few months to Scotland, where he was employed as engineer in a large factory near Montrose. On making this journey, he left little Robert in the custody of his first housekeeper, at Killingworth. On his return he was surprised, and slightly angry, at finding his house shut up, and without inmates. In his absence, the housekeeper (who was in every respect an excellent woman) had become the wife of his

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* The Long Benton registers contain the following entries: —

1. Frances Stephenson, West Moor Colliery, d. of George Stephenson and Frances his wife, late Henderson. Died Aug. 3, 1805. Buried Aug. 4. Aged 3 weeks.

2. Buried 1806, Frances Stephenson, late Henderson, West Moor, wife of George Stevenson (sic). Died May 14. Buried May 16. Aged 37 years.

brother Robert, in whose dwelling the little boy then was. Recovering possession of his child, George Stephenson again established himself at the West Moor, engaged a second housekeeper, and, having well-nigh emptied his pockets by paying some debts of his poor blind father, and by purchasing a substitute for service in the militia, once more set to work resolutely as brakesman, cobbler, and clock-cleaner. The burden of an invalid wife, of which he had been relieved, was replaced by the burden of a helpless father. Struck blind by an accident which has been already mentioned, 'Old Robert' was maintained in comfort by his sons until the time of his death.

George's second selection of a housekeeper was not so fortunate as his first, but he soon dismissed her, and received into his cottage his sister Eleanor, or, as her name is spelt in the family register, Elender. This worthy and pious woman, born on April 16, 1784, was nearly three years the junior of her brother, and consequently was still young when she came to keep his house. But young as she was, she had made acquaintance with sorrow. A merry lass, she went up to London to fill a place of domestic service, having first plighted her troth to a young man in her own rank of life, under a promise to return and become his bride whenever he wished to marry her. A year or two passed, when, in accordance with this agreement, her lover summoned her back to Northumberland. Eleanor went on board a Newcastle vessel homeward bound. Ill-fortune sent adverse breezes. The passage from the Thames to the Tyne consumed three weeks, and when the poor girl placed her foot on the quay side of

the Northumbrian capital, the first piece of intelligence she received was that her faithless lover was already the husband of another.

George Stephenson invited his sister to his house, and she, seeing a field of usefulness before her, wisely accepted the invitation. Her sister Ann having already married, and migrated to the United States, Eleanor was to George as an only sister.

The record of one trifling but pathetic difference between George and Eleanor is still preserved by family gossip. When Eleanor first took up her abode at the West Moor colliery, she wore some cheap artificial flowers in her bonnet. The sad experiences of the four preceding years had made the young brakesman less gentle in his temper and more practical in his views. Rude love of truth and dislike of *shams* caused him to conceive a dislike for these 'artificials,' as he contemptuously termed them. He asked Eleanor to throw them away, but she, averring that they cost good money, declined to do so.

'Nay, then,' said George, stretching out his hand, 'let me take them out and throw them away, and I 'll give thee a shilling.'

But Eleanor, usually so meek and gentle, drew back. George saw her secret and blundered out an apology. The poor girl had put those flowers in her bonnet, in the vain hope that they would render her comely face more acceptable to her false lover. She had been rightly punished for what she called her worldly vanity; and in humble acknowledgment of her error, she determined to wear 'the artificials' as a memorial of her foolishness.

From her early days she had been seriously inclined;

and her recent disappointment gave a tone to her mind that was not to be outgrown. Joining the Wesleyan Methodists, she regularly attended their prayer-meetings; and all who remember her bear witness that her labours of unassuming charity aptly enforced the teaching of her lips. Her spare hours were employed in visiting the sick, and repeating long passages from the Bible to those who were themselves unable to spell out the secrets of 'the Word.'

It was a bright day for little Robert when this young woman entered the cottage at the West Moor, and took him into her affectionate keeping. The best and most pleasant glimpses that can be obtained of his childhood, show the healthiest relations to have subsisted between him and this good aunt.

Every few months Aunt Nelly used to take the child to visit his various relatives scattered about the country. Ann Henderson had become the wife of Joseph Burn of the Red House farm, Wolsingham. She had done better had she been content with the poor young brakesman; but she was for a time the most important personage in the family. She had a strong feeling of kindliness for George, and when her sister Fanny was no more, she was constant in her hospitality to her nephew. A visit to Wolsingham was the child's highest ideal of happiness; and when he was there he used to repay his relations for their goodness by mimicking the peculiarities of his Killingworth acquaintance. Aunt Burn was in the habit of giving the little fellow, for his breakfast, fresh eggs with butter in them. This luxurious fare, so unlike what he was accustomed to in his father's cottage, appeared to him in the light of a strange and important discovery,

and it is still remembered how he gravely informed his Aunt Burn that 'when he went home, he'd teach his Aunt Eleanor to eat eggs and butter.'

Another excursion made by the child was to Ryle, where his aunt Hannah Henderson had married Mr. Elliot, a small innkeeper. The time of the year was summer, and as the journey was made on foot, little Bobby and his aunt rested several times on the dusty road, and refreshed themselves at wayside houses of entertainment. A gill of mild 'yell' was the modest order, invariably made by the aunt, and the half pint of drink was always divided between herself and her charge. On reaching Ryle the child found his tongue and impudence, and astounded his relatives by asserting that his staid aunt could not pass an ale-house without entering it. 'Ah! he was a hempy lad,' is the conclusion given amongst his humble relations to nearly all the stories of Robert Stephenson's early life.

Midway in the straggling street of Long Benton, on the right hand of the traveller going from Newcastle to Killingworth township, stands a stone cottage, composed of two rooms—one on the ground-floor, the other upstairs. For many years this has been the village school. At the present time the schoolmaster, in addition to his vocation of teacher, holds the office of postmaster—a fact set forth in bold characters on the exterior of the dwelling. On one side of the school-room, at a rude desk, sit eight or ten boys, whilst on the opposite side are ranged the same number of girls. At one end of the stone floor, between the two companies, sits the instructor, whose terms for instruction vary from threepence to sixpence per week for each pupil. When Robert Stephenson was a little boy,

the master of this school was Thomas Rutter. Fifty years ago the village schoolmaster had in many districts a more lucrative business than he enjoys in the present generation. A majority of the surrounding men of business were dependent on a neighbour endowed with 'learning' for the management of their accounts. By keeping the books of prosperous mechanics and petty traders, and by instructing adults bent on self-education, the village schoolmaster found the chief part of his work and payment, apart from his classes for the young. Tommy Rutter, as he is still familiarly called by the aged inhabitants of Long Benton, was both successful and well esteemed.

To Tommy Rutter's school Robert Stephenson was sent, and there he learnt his letters, at the same desk and under the same master as another distinguished child of Long Benton—Dr. Addison, the eminent physician, whose death under mournful circumstances recently created wide and painful sensation. In Rutter's time the girls were taught by Mrs. Rutter in the room upstairs, the ground-floor apartment being filled with lads—the sons of workmen at the surrounding collieries, and of small dealers living in adjacent townships. Many of them had never worn shoe or boot; but, though bare-footed, they were canny, hardy youngsters, and several of them have raised themselves to conditions of prosperity.

The exact year of Robert's entry into Rutter's school cannot be ascertained, but he was quite a little fellow when he first felt his master's cane. The walk over the glebe farm and past the churchyard from the West Moor to Long Benton Street—a distance of about a mile, or a mile and a half—was a long way for him, and Aunt

Nelly used to pity her bairn for having to trudge so far, to and fro. He had not been long at school when the season of harvest came, and Aunt Nelly went out gleaning.

Little Robert Stephenson petitioned his father for leave to accompany Aunt Eleanor and the gleaners. George by no means approved the request, as he argued that he did not pay fourpence, or possibly sixpence, a week for his son's schooling, in the expectation that the young scholar should leave his books at the first temptation.

But the petition was granted in the following terms: —

'Weel, gan; but thou maun be oot a' day. Nae skulking, and nae shirking. And thou maun gan through fra the first t' th' end o' gleaning.'

On this understanding Robert and Aunt Eleanor started for their vagrant toil, but long before sunset the boy was very tired. He kept up manfully, however, and as he trotted homewards at nightfall by the side of his aunt, he, like her, carried a full bag. At the gate of the West Moor cabin stood George Stephenson, ready to welcome them. Quickly discerning the effort Robert was making to appear gallant and fresh, the father enquired:

'Weel, Bobby, hoo did the' come on?'

'Vara weel, father,' answered Bobby stoutly.

The next day, bent on not giving in, the boy rose early, and for a second time accompanied the gleaners. The poor child slept for hours under the hedgerows; and when evening came he trotted home, bag in hand, but holding on to Aunt Nelly's petticoats. Again at the garden wicket George received them, with amused look, and the same enquiry:

'Weel, Bobby, hoo did the' come on?'

'*Middlin*, father,' answered Bobby sulkily; and, dropping his bag, he hastened into the cottage, and was asleep in a couple of minutes.

The third day came, and little Robert did his bravest amongst the gleaners: but the day was too much for him; his pride gave in, and on lagging home at nightfall, when he was once more asked by his father, 'Weel, Bobby, hoo did the' come on?' he burst into tears, and cried, 'Oh, father, warse and warse, warse and warse: let me gan to school agyen.'

It was not the time then to point the moral of those last three days, but the next day (Sunday, when even gleaners rest) the young father took his child under his arm, and placing him on the knee where he had so often sat, told him to be a good boy over his book, to leave hard work of the body for a few years to his elders, and to thank God that he (unlike his father) was not in childhood required to toil hard all day for a few pence. It was a sermon fit for a day of rest, and from no lips could it have come more appropriately than from the lips of George Stephenson.

Aunt Eleanor sat by, and heard George's paternal admonition, and was well pleased with its grave and serious tone. To tell the truth, the Sundays at the West Moor cottage were not altogether in accordance with Aunt Eleanor's views. George resolutely declined to accompany his sister to the meetings of the Wesleyan Methodists; and, what to her seemed even worse, he was by no means a regular attendant at Long Benton church. Sunday was the day when, walking up and down the colliery railway, he pondered over the mechanical problems which were then vexing the brains of all the

intelligent workmen of the neighbouring country. It was his day, too, for receiving friends.

Of George's early associates Robert Hawthorn has been already specially mentioned—and the relations between them have been briefly stated. Whilst George Stephenson and William Locke worked under Hawthorn, they found him an exacting and tyrannical supervisor. They both resented his domination, believing that he was jealous of their mechanical genius, afraid of being supplanted or surpassed by them, and anxious to keep them under. George Stephenson retained for many years a grudge against Hawthorn, but he was too prudent openly to quarrel with the cleverest engine-wright of the district. Slowly advancing himself from the position of a brakesman, whose duty it is simply to regulate the action of a steam-engine, to the higher status of the smith, or wright, who mends and even constructs the machine itself, George stood in frequent need of the counsel and countenance of Hawthorn, then his superior in knowledge, as he was also in age. The practice of the engine-wrights of George Stephenson's Killingworth days was very different from that of the educated engineers of a later date.

John Steele, another of George Stephenson's early and most valued friends, was a man worthy of especial mention; as his relations with Trevithick, and his ascertained influence on the history of the locomotive, give value to the few particulars that can be picked up with regard to him. The son of a poor North-countryman, who was originally a coachman and afterwards a brakesman on the Pontop Railway, John Steele in his early childhood displayed remarkable ingenuity in the construction of

models of machines. His schoolfellows at Colliery Dykes used to marvel at the correctness of 'his imitations of pit-engines,' and remember how in school 'the master could never set him fast' in figures. While he was still a school-lad, his leg was accidentally crushed on the Pontop tramway. After leaving the Newcastle infirmary, where the limb was amputated, he was apprenticed by the proprietary of the Pontop Railway to Mr. John Whinfield, the iron-founder and engineer of the Pipewell-gate, Gateshead. Whilst serving his apprenticeship he attracted the attention, not only of his masters, but also of Trevithick, who in nothing displayed his consummate genius more forcibly than in the sagacity with which he selected his servants and apprentices. In the autumn of 1860, the only sister of John Steele was still living, at a very advanced age, at Ovingham, under the benevolent protection of Mr. T. Y. Hall, of Newcastle, and could remember that Trevithick invited her brother to leave Whinfield's factory during his apprenticeship and to join him. Steele, however, remained at Gateshead until he had 'served his time,' and then joined Trevithick, during the manufacture of the locomotive constructed by that original mechanician in 1803 and 1804, in the latter of which years the engine won the memorable wager between Mr. Homfray, of Penydarren works, and Mr. Richard Crawshay, of the Cyfarthfa works. Returning from Trevithick's works to Gateshead, Steele, in 1804, built the first locomotive which ever acted on the banks of the Tyne.* This engine was made in Whin-

* The facts connected with this engine were brought to light in the columns of the *Gateshead Observer* and the *Mining Journal*. The curious

field's factory for Mr. Blackett of the Wylam colliery; but owing to the imperfections in its structure, it was never put on the Wylam line, but was used as a fixed engine in a Newcastle iron-foundry. Speaking of this engine, Mr. Nicholas Wood, whose book on Railroads has been copied by all writers on the subject, observes:— 'The engine erected by Mr. Trevithick had one cylinder only, with a fly-wheel to secure a rotatory motion in the crank at the end of each stroke. An engine of this kind was sent to the North for Mr. Blackett of Wylam, but was, for some cause or other, never used upon his railroad, but was applied to blow a cupola at the iron-foundry at Newcastle.' In this statement Mr. Wood fell into a pardonable but not unimportant error. The engine was undoubtedly in all essential points a reproduction of the one already made by Trevithick, with whose name, even more than with those of Leopold, Cugnot, Oliver Evans, or William Murdock, will be associated the practical introduction of the steam-locomotive; but it was made in Gateshead about the year 1804. It is equally certain that John Steele made it, and that when it was finished it ran on a temporary way laid down in Whinfield's yard at Gateshead. John Turnbull, of Eighton Banks, living in 1858, remembered the engine being made, whilst he was serving his apprenticeship at Whinfield's factory. When it was completed, it ran, according to Turnbull's account, backwards and forwards quite well, much to the gratification of 'the quality' who came 'to see *her* run.'

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are referred for farther information to the *Mining Journal* for October 2, 1858, and October 16, 1858, and to the *Gateshead Observer* for August 28, September 18, October 2, and October 9, in the same year, 1858.

The subsequent career of John Steele was adventurous. He was employed by the British Government to raise sunken ships; and, according to his sister's account, received a medal for his efforts to raise the 'Royal George.' Subsequently he went abroad, and having established a foundry and machine factory at La Gare, near Paris, was commissioned to make some engines for several boat companies. His death occurred under painful but characteristic circumstances. Whilst engaged at Lyons in fitting engines on board a boat, he met with Mr. Charles Manby, a gentleman since well known as the Secretary of the Institution of Civil Engineers, but who at that time (1824-5) was engaged in engineering pursuits in France. On the day when Steele's vessel was tried, Mr. Manby took his workmen on board to assist his countryman. On going below, he perceived that the engineman had fastened down the safety-valve, with the avowed intention of 'making her go or bursting her.' Seeing the danger, Mr. Manby and his men hastily quitted the ill-starred vessel. A few minutes later the boiler burst, and by the explosion Steele was killed, together with several important persons of Lyons and many of the spectators on the quays.*

Anthony Wigham, another of George's intimate associates, was the farmer occupying the glebe farm of Long Benton, the cottage-house on which small holding stands within sight of the West Moor cabin. He was a bad farmer, and, as bad farmers usually are, a poor one; but he had mastered the principal rules of arithmetic, and had a smattering of natural philosophy. George culti-

* Minutes of Proceedings Inst. C. E., vol. xii. p. 143.

vated the farmer's acquaintance, and gained from him all the little knowledge he could impart. The teacher was in after life amply repaid for his lessons. Bad farming was in due course followed by commercial failure, and when the farmer was at a loss where to look for daily bread, George Stephenson—then grown a rich man—took him to Tapton House, and, having made him the superintendent of his stables, treated him kindly to the last.

Another of George Stephenson's early friends was Captain Robson, a hale, hearty, manly sailor. His early life had been passed on board a man-of-war, and he afterwards became captain of a Newcastle trading vessel, built for him by his father. Marrying the only daughter of a prosperous farmer, Captain Robson gave up sea-life, and became a farmer in Killingworth township. It was in his house that George discussed his schemes for the construction of the famous safety-lamp. After again turning sailor and again relinquishing the sea, the captain still lives to tell his version of the way in which the secret of the invention of the lamp was foolishly blabbed by Dr. Burnet, the colliery-doctor, to his brother-in-law, Mr. Buddle, the viewer, who, he alleges, speedily conveyed the information to Sir Humphry Davy. The captain's story, thoroughly believed as it is by the veteran, is, of course, not to be relied upon; but it forms an amusing counterpart to the angry accusations preferred by Sir Humphry's friends against George Stephenson, of having surreptitiously possessed himself of the philosopher's secret.

Hawthorn and Steele, living at a distance, were comparatively rare visitors at Killingworth. George saw

more of them on pay-nights at Newcastle, when he and all the clever mechanics of the country round met together, and exchanged views on the difficult 'jobs' then engaging the attention of the local engine-wrights; the simple workmen thus unconsciously creating the earliest and the finest school of practical engineering. When, however, either Hawthorn or Steele did make an appearance at the West Moor, the favourite topic was the possibility of employing steam for purposes of locomotion. Every word that came from Steele—Trevithick's pupil and workman, who had himself within six miles of Killingworth built a machine which, with all its defects, had actually travelled under the influence of steam — George Stephenson stored up in his memory. Steele was never weary of prophesying, that 'the day would come when the locomotive engine would be fairly tried, and would then be found to answer.' No wonder that George Stephenson caught enthusiasm from such a teacher.

CHAPTER III.

ROBERT STEPHENSON, THE SCHOOLBOY.

(ÆTAT. 9–15.)

Robert and the Pitman's Picks — 'Mind the Buiks' — George Stephenson's pecuniary Position whilst his Son attended Rutter's School — George appointed Engineer to the Collieries of 'The Grand Allies' — The Locomotive on the Wylam Line — George Stephenson's first Locomotive — His Appointment to the 'Walker Iron-works' — 'Bruce's Academy' — The Cost of Robert's Tuition at the School — Robert Stephenson's Reception by his new Schoolfellows — The Boy's delicate Health — The Purchase of his Donkey — John Tate — Rival Safety Lamps — Testimonial and Public Dinner to George Stephenson for his Lamp — Home Gossip — 'Throwing the Hammer' — George Stephenson's Views with regard to the Education of his Son — Robert Stephenson's Plan of a Sun-Dial.

AS soon as little Robert was strong enough to help his father, he was put to do such jobs as were suited to his powers. One of his earliest recollections in after life was of having to carry the pitmen's picks to the smith's shop in Long Benton, when they needed repair. This commission he executed on his way to Tommy Rutter's school, and as he returned home he used to bring the implements back. Two years before his death, after his brilliant career of adventure and success, he visited Long Benton with some friends, and pointed out to them the route over the fields, along which he used to trudge laden with the hewers'

implements. But George's chief injunction to his only child was to 'mind the buiks.' The father was determined that his boy should not commence the real battle of life, as he had done, unable to cipher, or write, or even to read.

An erroneous impression exists that George Stephenson denied himself the indulgences appropriate to his condition in order that he might give his boy a superior education, and that in sending his son to school he showed his superiority to most of his fellow-workmen. He felt personally the disadvantages of a very defective education, and he determined that his son should not labour under the same want.

In 1812, on the death of Cree, the engine-wright of the Killingworth colliery, George Stephenson was appointed engineer, with a salary of £100 per annum, to the contiguous collieries possessed by Sir Thomas Liddell, Mr. Stuart Wortley, and the Earl of Strathmore—the 'grand allies,' as they were called in the neighbourhood. In addition to this salary, George had the proceeds of his clock-mending and clock-cleaning business — a much more important source of gain than has hitherto been supposed. He not only kept in order the clocks of the pitmen and superior workmen, but performed the same service for surrounding farmers. Farmer Robson paid him half-a-crown for cleaning watch or clock. He was also regularly employed at a fixed annual sum to attend to the clocks in the establishments of several wealthy gentlemen of the vicinity. Moreover, throughout the term of his Killingworth residence, he lived rent-free and had his fuel from the pit. During the year, also, he increased his income considerably by jobs connected

with the repair of machinery. His income therefore amounted in 1812 to about £150. With such means at his command it was only natural that he should give his son the rudiments of education at the village school. Thus in sending Robert Stephenson to Rutter's school, George Stephenson only did as every reputable father of his own station and of similar means in the parish of Long Benton did as a matter of course.

On gaining the important post of engineer to the collieries of the 'grand allies,' George Stephenson's advances towards success became quicker, and at the same time easier. Watchful of all that was going on in the neighbourhood relative to the steam engine, he knew the result of the memorable experiments on the Wylam line, as soon as they were accomplished. On that line it was first proved by Mr. Hedley, the viewer of Mr. Blackett's colliery, that the adhesion* of smooth

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* 'About this time Mr. Blackett had considerably improved his engines, and by experiments had ascertained the quantity of adhesion of the wheels upon the rails, and had proved that it was sufficient to effect the locomotion of the engine upon railroads approaching nearly to a level, or with a moderate inclination. His railroad was a plate-rail, and would consequently present more friction, or resistance, to the wheels than the edge-rail, and on that account the amount of adhesion would be greater than upon the other rail. Still the credit is due to Mr. Blackett for proving that locomotion could be applied by that means only.' — Mr. Nicholas Wood's *Treatise on Railroads*, third ed. p. 285.

'It was, however, a question of the utmost importance to ascertain if the adhesion of the wheels of the engine upon the rails were sufficient to produce a progressive motion in the engine, when loaded with a train of carriages, without the aid of any other contrivance; and it was by the introduction and continued use of them upon the Wylam railroad that this question was decided: and it was proved that upon railroads nearly level, or with very moderate inclination, the adhesion of the wheels alone was sufficient, in all the different kinds of weather, when the surface of the rails was not covered with snow.

'Mr. Hedley informs us that they first tried by manual labour how

wheels on smooth rails would afford sufficient resistance to enable an engine to drag a train of loaded carriages. And it was on that same line, between Wylam and Lemington, that engines with smooth wheels, running on smooth rails, first took the place of horses and oxen for purposes of traffic.

The alacrity with which George Stephenson, the self-taught engineer, comprehended the importance of the Wylam discoveries, and put them in practice upon the Killingworth line, in locomotives of his own construction, which were fully equal in efficiency to those on the Wylam way, attracted general attention to his proceedings. It was seen that he was a man who, with favourable opportunities, would become a distinguished engineer. The Wylam way was laid with plate rails, whilst the Killingworth line had edge rails. George Stephenson therefore built 'the first locomotive engine that propelled itself by the adhesion of its wheels on edge rails.' The first trial of the engine took place on July 25, 1814, with marked success. When the training and antecedents of the young workman (then only thirty-three years of age) are taken into consideration, the achievement seems almost incredible.

Amongst the gentlemen of the neighbourhood who watched the progress and hailed the success of George Stephenson's first engine, no one was more enthusiastic than Mr. Losh, the senior partner of the firm of 'Losh,

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much weight the wheels of a common carriage would overcome without slipping round upon the rail; and having found the proportion it bore to the weight, they thence ascertained that the weight of the engine would produce sufficient adhesion to drag after it, upon their railroad, a requisite number of carriages.'—Wood's *Treatise on Railroads*, third ed. p. 287.

Wilson, and Bell.' This highly cultivated gentleman, the fellow-student and friend of Humboldt, survived in a venerable old age in the autumn of 1860, to tell the story of his intercourse with George Stephenson. With a large capital embarked in the Walker iron-works, as well as in his chemical factories, he saw in the engine-wright a man well fitted to carry out his enterprises and to suggest new ones. He made overtures to him; and, in the beginning of the year 1815, an arrangement was made that George Stephenson should come to the Walker iron-works for two days in each week, receiving for his services a salary of £100 per annum, besides participation in all profits arising from his inventions. To secure his good fortune in this compact from all drawback, the 'grand allies,' with proper liberality to an engineer who had served them well, gave him permission to accept Mr. Losh's offer, and at the same time retain his post at Killingworth with an undiminished salary.

George Stephenson, with these two concurrent appointments yielding him a clear £200 per annum, besides perquisites and the participation in profits reserved to him by Losh, Wilson, and Bell, began to feel himself a rising man. Industrious as ever, he retained his clock-cleaning business; and he had made some not unimportant savings. A prosperous mechanic, with a good income, unmarried, and with brighter prospects opening before him, could not think of giving his only child no better education than that which a village schoolmaster imparted to the children of ordinary workmen.

It was no part of his plan to bring up his son with an expense and refinement unusual in his station, but he wished to educate him in accordance with the rules of

his rank. He placed him, therefore, when he was nearly twelve years old, as a day-pupil in an academy at Newcastle, kept by Mr. Bruce.

The friend and biographer of Dr. Hutton, and the author of several educational works of great merit, Mr. John Bruce had raised his school to such excellence that it then ranked higher than the Newcastle grammar-school, where Lord Stowell, Lord Eldon, and Lord Collingwood received their early instruction. The 'Percy Street Academy'—as Mr. Bruce's seminary was and still is called—was then attended by more than a hundred pupils, who might be described as a good style of 'middle-class boys.' Some few were the sons of the minor gentry of the vicinity, but the majority were the sons of professional men and traders of Newcastle and Gateshead. Not one half of the boys learned either Greek or Latin. Amongst those who did not receive classical instruction was Robert Stephenson, who entered the school on August 14, 1815, and remained there four years. During that time, the whole sum paid for his education fell short of £40. The expenditure, therefore, for a father in George Stephenson's circumstances, was sufficient and appropriate, but nothing more.

On Robert Stephenson's appearance at the Percy Street academy he had to encounter the criticisms of lads who regarded him as beneath them in social condition. 'A thin-framed, thin-faced, delicate boy, with his face covered with freckles,'* dressed in corduroy trowsers and a blue coat-jacket, the handiwork of the tailor

* Such is the description of him given by a Newcastle gentleman who distinctly remembers his first coming to Bruce's school.

employed by the Killingworth pitmen, the new-comer presented many marks for play-ground satire. On his shoulder he carried a bag containing his books and a dinner of rye-bread and cheese. The clattering made by the heavy iron-cased soles of his boots on the school floor did not escape the notice of the lads. Mr. Bruce was on the look-out to see that he was not improperly annoyed; but there was no occasion for the master's interference. In Robert's dark eyes there was a soft light of courtesy that conciliated the elder boys. When they entered into conversation with him, however, they could not refrain from laughing outright. Gruff as their own voices were with Northumbrian 'burr,' they were unused to the deep, guttural pit-intonations with which Robert expressed himself. It was no slight trial to a sensitive child just twelve years old to find himself the object of ridicule. Puzzled as to what he had said that was ludicrous, and deeply mortified, he turned away, and kept silence till the business of school-hours commenced.

At first Robert Stephenson walked to and from school —a distance in all of about ten miles; and this labour disinclined him for joining in the sports of the play-ground. At dinner he held no intercourse with his schoolfellows; for while they consumed the more luxurious fare provided for them by Mrs. Bruce, he ate the inexpensive provision put into his satchel by Aunt Eleanor, or partook of the frugal fare of an uncle's family. Gradually, however, he became a favourite with the lads. But it soon became clear that Robert Stephenson was not strong enough to bear the long walk each night and morning. He was liable to catch cold, and the tendency it had to strike at his lungs made his father apprehensive

that tubercular consumption might attack him. At this time, too, the boy was afflicted with profuse nightly perspirations, to obviate which the doctors made him sleep on a hay mattress. A step more likely to do good was taken by George Stephenson, who purchased for the boy a donkey, which was for years the pride of Long Benton. Robert had for a long time been in possession of a dog and a blackbird, which he used to aver were the cleverest inhabitants of the village. His new acquisition gave him lively satisfaction, and he was prouder of it than he was in after life of any horse in his stable. To spare his 'cuddy,' he used, in fine weather, to walk and ride to school on alternate days.

John Tate (in 1860 the foreman blacksmith at the colliery,) the son of George Stephenson's old friend, Robert Tate, formerly the landlord of the Killingworth 'Three Tuns,' was in early boyhood the familiar companion of Robert Stephenson. The two lads had many a prank together. Shortly before Robert left Rutter's school, they were out birds'-nesting, when Robert fell from a high branch of a tree to the ground, and lay for a minute stunned. On recovering his consciousness, he experienced so much pain on moving one of his arms that he nearly fainted. 'My arm is broken, John Tate,' the little fellow said quietly; 'you must carry me home.' Luckily John Tate had not far to carry him. In due course the broken arm was set; but throughout the operation, and indeed from the time when he told John Tate to carry him home until he was asleep, he did not utter a cry of pain. A child of eleven years who could evince such fortitude was clearly made of the right stuff.

The first half year of Robert Stephenson's career at the Percy Street academy was an eventful one with his father. It saw the invention of the Geordie safety-lamp, and the outbreak of that contest between Sir Humphry Davy and the Northumbrian engine-wright, in which the latter unquestionably displayed the greater dignity and moderation. George Stephenson's first lamp was tried on October 21, 1815. In the Northumbrian coal fields three lamps are used more than any of the others which inventors have contrived for the protection of the miner,— Dr. Clanny's lamp of the year 1813, and the lamps invented two years later by the scientific reasoner Sir Humphry Davy, and the practical mechanician George Stephenson. The principle in each of these last-named lamps is identical, but the two originators arrived at it by very different processes. To decide on the respective merits of these lamps is no part of this work. Each has its supporters; and the partizans of a particular kind of 'safety-lamp' are scarcely less vehement and uncharitable in their zeal, than are the defenders of a particular school of religious opinion. In the mines where 'the Clanny' is used, nothing but 'the Clanny' has a chance of trial, or a good word. The same is the case with 'the Davy' and 'the Geordie.' One thing, however, is certain. An efficient and luminous safety-lamp is still to be invented. It is amusing to hear the virtuous indignation of those who, never having visited the narrow passages of a coal mine, vehemently condemn the fool-hardiness and perversity of miners who prefer the candle to the lamp. So dim a ray is emitted by 'the Davy' or 'the Geordie,' it is far from wonderful that underground toilers should regard them as

obstacles to industry rather than as agents for the preservation of life.

With regard to George Stephenson and his invention, the time has come for the final sweeping away of a fiction. The true nobility of the elder Stephenson is only insulted by those who would surround it with the vulgar glare of melodramatic heroism. Amongst the many anecdotes by which indiscreet eulogists have hoped to exalt the fame of a remarkable man, is the story that George Stephenson, to test the worth of his lamp, took it on the memorable night of October 21, 1815, into the foulest part of a foul mine, at the peril of instant destruction. Had such a risk been necessary to preserve the lives of his fellow-creatures, such conduct would have entitled him to endless praise for self-sacrificing intrepidity. But as he knew there was no need to incur such danger, the act attributed to him would have deserved no commendation. Wilfully and deliberately to encounter extreme peril, with the full knowledge that it is needless, is the part of a fool—not of a hero. Whatever may be George Stephenson's claim to be regarded as the latter, he certainly had nothing in common with the former. The important experiment, which has been so greatly misrepresented, was made on a certain insulated quantity of gas, and under circumstances that precluded the possibility of serious disaster. Mr. Nicholas Wood, the well-known writer on Railroads, at that time the 'viewer' of the colliery, assisted at that trial, and says, 'the box, or cabin, in which the lamp was tried was not of such dimensions as would, if an explosion had taken place, have produced the effect described; as only a small quantity of gas was

required, and we had had sufficient experience not to employ more gas than was necessary: at most, an explosion might have burnt the hands of the operator, but would not extend a few feet from the blower.'

To George Stephenson one of the best consequences of his invention was the quarrel which it provoked between his friends and the supporters of Sir Humphry Davy. The coal-owners of the district formed themselves into two parties. A newspaper war was waged, in which the advocates of Stephenson were altogether victorious. The partizans of Sir Humphry gave him as a reward for his invention £2,000, awarding to George Stephenson 100 guineas for the lamp they professed to regard as a clumsy contrivance, if not an imitation. This award was officially communicated to George Stephenson by his dogged, but honest, opponent, Mr. Buddle.

To make head against this demonstration of Sir Humphry's friends, George's supporters got up another testimonial, amounting to £1,000. A part of this sum was expended on a silver tankard* which, together with the balance of the money, was presented to the inventor of 'the Geordie,' after a public dinner given at the Assembly Rooms at Newcastle. The chair was taken by George's

* The tankard was inscribed —'This piece of plate, purchased with a part of the sum of £1,000, a subscription raised for the remuneration of Mr. George Stephenson for having discovered the fact, that inflamed fire-damp will not pass through tubes and apertures of small dimensions, and having been *the first* to apply that principle in the construction of a safety-lamp, calculated for the preservation of human life in situations formerly of the greatest danger, was presented to him at a General Meeting of the Subscribers, Charles John Brandling, Esq., in the chair, January 12, 1818.' Among the numerous pieces of 'presentation plate' on Robert Stephenson's sideboard in after days, THE TANKARD was always the most prized.

hearty patron, Mr. Brandling, of Gosforth Hall; and of course George, as the distinguished guest of the night, had to return thanks for the honour done him. In his palmiest days George Stephenson was not an orator, although when he spoke on subjects which he thoroughly comprehended he expressed himself in a plain, sensible, and terse manner, which carried conviction of his sincerity and of the truthfulness of his narration.

Sorely did he stand in need of eloquence when he stood up in the Newcastle Assembly Rooms, and addressed a company of wealthy merchants and enlightened gentlemen. His speech he had learnt by heart, having composed it and written it out with great care. Fortunately, this interesting document, which ought to be committed to the custody of the Newcastle Literary and Philosophical Institution, has been preserved, and a fac-simile is given in the Appendix. The speech ran thus: —

Sir,—In Receiving this valuable present which you and the Gentleman of this Meeting has bean pleas'd to present me with this day I except with Gratitude But permit me to say valuable as this present is and gratefull as I feal for it I still feal more by being honour'd by such and highley respectable meeting the Gentlemen of which having not only rewarded me beyond any hopes of mine for my endeavours in construting a safity Lamp but has supported me in my claims as to priority in my invention to that of that distinguished Pholosipher S H Davy. For when I conseder the manner that I have been brought up and liv'd the manner of which is known to many of the Gentleman present and when I consider the high station of S H. Davy his high Charactor that he holds among society and his influence on scientific men and scientific bodys. all of which Sir lays me under a Debt of Gratitude to the Gentlemen of this meeting which Gratitude shall remain with me so long

as ever I shall live. I shall conclude, sir, with my heart felt thanks to the Gentlemen of this meeting for their great reward thare support in my struggle with my competitor and hear I beg leave to thank in particular R Brandling, Esqr. which I trust the Gentleman of this meeting will give me Credit for. for I beleive this meeting knows well the active part he has taken in my behalf And I hear do thank him publicly for it.*

Keeping close to the letter of this programme, he acquitted himself creditably, but at a family gathering where the great event of the dinner was discussed in all its bearings, he confessed that his embarrassment whilst he delivered the oration was so great, that his face seemed to him 'all on fire.' 'Oh, Grace,' he said to his sister-in-law Grace Henderson, who had become the wife of Bartholomew Twizell, 'if thou could but ha' seen ma meeting so many gentlemen at the 'Sembly Rooms, thou maught ha' lit a canle at ma face.' On this, Jane, another married sister-in-law, laughed, and made a joke at his rise in life. 'Noo thou 'll be for having a bra' ruffle to th' shirt, and then thou 'll be looking doon on a' th' own frien's.'

'No, Jane,' he answered slowly and seriously, 'thou 'll nivar see no change in ma.'

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* It has been thought right to retain the faults of orthography and grammar to be found in this and other of George Stephenson's writings incorporated in this work. It is desirable that everything relating to such a man should be known, his weakness as well as his strength. It is a fact to be pondered over, that with his powerful intellect and resolute will, George Stephenson to the last could neither write grammatically nor spell correctly, but had to rely on his secretary. Whilst he was braking the ballast engine at Willington Quay, he borrowed a grammar of Mr. John Dobson, still a distinguished architect at Newcastle. He could not, however, master its secrets, and in a few days brought the book back, saying, 'I oonderstond tha vow'ls, but I canna gat hold o' tha verbs.'

At the narration of this story nearly three years since, more than one of George's humble kin who were present bore testimony that 'he never did change—he was always the same—riches made no difference in him towards his poor relations.'

Whilst George Stephenson steadily progressed in his professional career, his son continued his attendance at Bruce's school. He did not figure conspicuously in the Percy Street play-ground, but at home he displayed no less physical than mental energy. Every evening his father kept him hard at work over the tasks set him at school, and over plans of steam-engines and other mechanical contrivances. The neighbours sometimes thought George was an 'o'er strict father,' and pitied the poor boy who was kept so close to his books. Robert, however, had leisure for amusement. Every autumn he and his friends stripped of fruit the best trees in Captain Robson's orchard. Like his father, too, the boy excelled in athletic sports, throwing the hammer and putting the stone with skill and force.

In throwing the hammer — a favourite sport with Northumbrian workmen—the thrower stands with his legs wide apart, when, putting his arms behind his back, and grasping the hammer by the handle with both hands, he casts it forwards between his legs. Apart from the muscular force employed, the knack greatly consists in letting the hammer go at the right moment. Relinquished too soon, the missile strikes the ground close at the player's feet; retained after the proper moment, it is apt to rise up into the thrower's face. In his sixteenth year, Robert was engaged at this pastime, and made the mistake of keeping the hammer too long in hand. The

consequence was that the ponderous implement, weighing a little under 28 lb., rose, struck him on the forehead, and laid him flat and perfectly stunned upon the ground. John Tate witnessed the accident; but on the following day he saw Robert throwing the hammer with as much resolution as ever.

Robert's schoolfellows at the Percy Street academy failed to detect in him any remarkable signs of talent, and some of them still express their astonishment at his subsequent scientific acquirements and professional achievements.

Before leaving Robert Stephenson's school-life, we may remark, that his father's experiences and difficulties were the measure of what he thought requisite for the instruction of his son. The subtler influence of letters and the more valuable results of culture were matters about which George Stephenson thought little. Learning he regarded in a strictly utilitarian sense, as an engine necessary for the achievement of certain ends. His ambition was to be a skilful engineer, and a perfect man of business; and in his efforts to achieve this ambition he found two perplexing obstacles in his ignorance of mathematics and his inability to write with facility, or logical exactness. What he desired to be himself, that he also wished his son to be. Robert Stephenson should be an engineer and a director of labour; but he should not have his bravest exertions baffled by defective knowledge. In this spirit George caused his son to learn French, because it would be useful to him in business.

Up to the time when he left Bruce's school, Robert did not exhibit any marked enthusiasm for the pursuits

in which his father was most warmly interested. Possibly George Stephenson was too urgent that he should prosecute the study of mechanics, and by continually goading him to work harder and harder 'at his buiks' gave him a transient distaste for subjects to which he was naturally inclined. As a member of the Philosophical and Literary Society of Newcastle, Robert brought home standard popular works and encyclopædic volumes treating of natural science and of inventions. These books his father read and compelled him to read; but the labour went very much against the boy's grain.

The earliest 'drawing' by Robert Stephenson's hand of which there is any record, was that of a sun-dial, copied from Ferguson's 'Astronomy,' and presented by the lad to Mr. Losh, in the year 1816, in token of his gratitude to him as his father's benefactor. This drawing set the father and son on another work—the construction of a real sun-dial, which, on its completion, was fixed over George's cottage door, where it still remains, bearing the date, 'August 11th, MDCCCXVI.'

A good story is told of 'the hempy boy,' who dearly loved mischief. From the meadow before the West Moor cabin he sent up his enormous kite, reined in by copper wire instead of string, the copper wire being insulated by a piece of silk cord. Anthony Wigham's cow, peacefully grazing in the meadow, was first favoured with a smart dose of electricity, one end of the copper wire being brought down to the top of the animal's tail. Standing at his cottage window, George Stephenson watched the discomfiture of his neighbour's cow in high glee; but when the operator, ignorant whose eyes were upon him, relinquished the torture of the 'coo,' and proceeded to

give his father's pony a fillip with the subtle fluid, George rushed out from his cottage with upraised whip, exclaiming, 'Ah! thou mischeevous scoondrel — aal paa thee.' It is needless to say that Robert Stephenson did not wait to 'be paid.'