

From Chambers's Edinburgh Journal.

GEORGE STEPHENSON.

TOWARDS the close of the last century, there resided at the colliery village of Wylam, some eight miles from Newcastle, an individual named Robert Stephenson, by occupation a fireman to one of the colliery engines. He and his wife Mabel occupied a part of a small two storied house—still standing—with unplastered walls, clay floor, and naked rafters; let out in portions to labourers at the neighbouring pits. Here according to the 'rechercher' in the family bible, was born, on the 9th of June, 1781, Robert Stephenson's second son, George. The family afterwards grew to six in number, and Robert and his wife sometimes found it difficult to make ends meet out of an income of twelve shillings a week, with provisions at war prices. When all ordinary expenses were paid, there was not much left to devote to clothing, and nothing to the schooling of the children. George's mother was a woman of delicate health and nervous temperament, subject to 'vapours'; and his father was far from being robust. His father's engine fire was a favourite resort of the boys and girls of the neighbourhood, who used to crowd round it on evenings and half-holidays to listen to some strange adventure of Sinbad or Robinson Crusoe, which he would relate to them; or, better still, to some story of his own invention. He was fond of wandering in the fields, and went birdnesting in summer time; and in winter, had a flock of robins which he had tamed sufficiently to come hopping round him, and pick up crumbs at his feet. When George was eight years old, the family removed to Dewly Burn, another hamlet a few miles away. When there was so little coming in, and so many mouths to fill, it was necessary that the children should be set to work at as early an age as possible; so George was set to look after a neighbour's cows, and keep them from straying, at an income of two-pence a day. The lad's mind, even at this early age, was not idle, for he made reed whistles, and clay engines with hemlock steam pipes; but not to the exclusion of his bird-nesting propensities. Quitting his cow minding after a while, he was set to lead horses at the plough, hoe turnips, and do other farm work at an advanced salary of four pence a day. But the height of his ambition at that time, was to get employment at the colliery, and this he obtained after a while, still with an increase of earnings, first to sixpence, and then to eight pence a day. He was soon removed to another colliery, two miles off, and set to drive the gin. This went on for several years, George passing much of his leisure time in taming black-birds and attending to his rabbit-hutch—a great bare-legged laddie, full of fun and tricks. At fourteen years of age, he was appointed assistant fireman to his father, at a shilling a day; but soon after this came another family removal to Jolly's Close, a few miles further south. The family were all at work by this time, the lads at the pits, and the girls assisting their mother at home; and the united earnings enabled them to live more comfortably than heretofore.—When George was fifteen, he obtained a situation as fireman on his own account, and his wages were after a while advanced to twelve shillings a week, an event which he announced to his fellow workmen with the exclamation; 'Now I'm a made man for life!'

It was a proud day for father as well as son when George was appointed 'plugman,' and his father fireman to the same engine; although the former was considered the higher post of the two. George now devoted himself to the study of the engine under his care, taking it to pieces, cleaning it, and putting it together again, so that he soon acquired a thorough knowledge of its method of working and construction. He was eighteen years old by this time, earning full workman's wages, but not yet able to read. His duties occupied him twelve hours a day, so that his leisure moments were few. His mind was fully bent on learning to read, for he found that the knowledge he was in want of was unobtainable otherwise. So he began to attend a night school three evenings a week, to take lessons in reading and spelling; and practised making pothooks, so that by the time he was nineteen he was able to write his own name. After this, he took to arithmetic, in which he soon made great progress, working out his sums while tending his engine, and having fresh ones set him each evening. In the course of time, he was appointed brakesman at the Black Callerton Colliery. His wages were now nearly a pound a week; but not satisfied with this, he turned cobbler, and mended his fellow workmen's shoes; for he had fallen in love with pretty Fanny Henderson, a servant at a neighbouring farm, and was saving up towards house-keeping. Fanny's shoes, as it happened, wanted mending, so George must try his hand at them. He could hardly bear to part with them after they were mended, but carried them about with him in his pocket for some time, pulling them out now and then and gazing fondly at them; and, doubtless, when obliged to give them up, taking his payment out in kisses. It was here that he saved his first guinea, declaring himself to be 'a rich man' when he put it away. On Saturday afternoons instead of going off drinking with the other

workmen, he always made a point of taking his engine to pieces for the purpose of cleaning it. Although he would never accompany his comrades in their drinking bouts, he was fond of joining them in the performance of feats of agility, in which, as in most other things, he excelled. He was not without pluck either, as he proved by the thrashing he gave bully Nelson, the terror of the village. His school education still went on in winter evenings, till he had advanced so far in arithmetic that the master could teach him no more. Still saving up, by degrees he amassed sufficient money to enable him to furnish a small cottage in a very humble manner; and this being done, Fanny and he were married in November, 1802. He took his bride home from church on horseback, she being seated on a pillion behind him, with her arms round his waist.

Still theorising—attempting, among other to find out perpetual motion—he yet found time to get through much hard practical work. Thus, from mending shoes he took to making them, and shoe lasts also; and clock cleaning was another of his occupations. Thirteen months after marriage, his son Robert was born; a short time after which event, the family removed to Killingworth, seven miles from Newcastle. At this colliery, which is a very extensive one, George was appointed brakesman. Soon after their arrival, his wife died; a loss which affected George deeply, who cherished her memory through life with the most affectionate reverence. Shortly after, he accepted a temporary engagement in Scotland, from which he returned, after a year's absence, with twenty-eight pounds in his pocket, to find his father blind, helpless and deeply in debt. Having paid the debts, he removed his parents to a small cottage near his place of work; where the aged couple lived for several years, supported entirely by George. Being drawn to serve in the militia, the remainder of his twenty-eight pounds had to be paid for a substitute to serve in his stead. This last blow brought him to the verge of despair. It seemed as if all his efforts to get forward were to be unsuccessful; and he had fully made up his mind to emigrate, but was unable to raise sufficient money to pay for his passage. He still went on experimenting, making models, and obtaining a thorough knowledge of his own engine. A new pit was sunk in the neighbourhood of the one where he worked; but the engine fixed for the purpose of pumping the water out of the shaft was unable to accomplish its duty; neither the engineer nor any one in the neighbourhood could set it to rights. This went on for twelve men. At length, George, who had thought the matter over for several months, volunteered his services, which were accepted almost in despair; for what could be expected from a poor working man, where so many educated brains had failed? In four days, however, a thorough cure was effected; and in two days more the pit was free from water.

In the year 1812, George Stephenson was made engine wright at Killingworth, at a salary of £100 a year. He was now a good arithmetician, and an eager reader of any scientific works he could lay hands on. During the time he was at Killingworth, he invented several improvements in pit machinery. Having experienced in his own case the want of a good education while young, he determined that his son should have nothing to complain of on that score. So Robert was sent to a good school at Newcastle; and, as soon as he was old enough, entered as a member of the Literary and Philosophical Institute of that town. The boy's progress justified his father's expectations. Like his father, he was fond of reducing his own theories, and those of other people of which he read, to practice. Wanting something to experiment upon, Robert, one day selected his father's pony, and administered to it a severe electric shock, having prepared a kite and copper wire conductor for the purpose. His father coming out on the instant, shook his whip at him, and called him a mischievous scoundrel, but chuckled inwardly at the lad's ingenuity.

As early as the middle of the seventeenth century, wooden rails had been laid down in various parts of the north, from the collieries to the water-side, to facilitate the transit of materials between the two points, one horse being able to draw three or four times more over the rails than on an ordinary road. In the course of time, these wooden rails came to be plated with iron; and thus rendered more durable; and rails made entirely of cast iron were gradually introduced in various parts of the country. After a time, various scientific minds were attracted by the idea of constructing a machine to be worked by steam, which should run on these tram roads, and supersede horses. Many engines of different kinds were built by various parties, some of them being entire failures, others having a partial success. Thus, in 1804, Captain Trevithick was considered to have achieved a great labour when he constructed a locomotive which would drag ten tons of iron after it at the rate of 5 miles an hour. Practically, however, this engine was a failure, and had to be dismantled in a short time. In 1812, Mr Blenkinsop, of Leeds, constructed an engine which would drag thirty coal wagons at a speed of about three miles and a quarter an hour. The great peculiarity

of this machine was, that the driving-wheel was cogged, and worked into a toothed rail laid on the outside of the ordinary rails. All those who had hitherto turned their attention to the question, had worked on the idea that a heavy engine, constructed with a plain flanged wheel to run on smooth rails, would not be sufficient adhesive ever to attain any considerable speed; in other words, that the wheels would slip round without biting the rails, and the locomotive come to a dead stand as soon as high-pressure steam was attempted. George Stephenson was the first to do away with this fallacy, which had been a stumbling-block in the way of all his predecessors, and to prove that 'the weight of the engine would of itself give sufficient adhesion for the purposes of traction.' At the Wylam Colliery, two or three engines of different kinds were tried with but indifferent success; and George, who had now bent the whole energy of his powerful mind to the locomotive question, went over frequently to see them work, and to study the principles on which they were built. He turned the subject over in his mind and devoted month after month to patient investigation and preliminary experiments tending in one direction. Lord Ravensworth was balled a fool by many people, when, after listening to George Stephenson's statements, he advanced him sufficient money to construct a locomotive engine in accordance with his plans. There were still many difficulties to contend with, but on the 27th of July, 1814, his engine was placed on the tram-road at Killingworth Colliery. It was constructed with smooth wheels to run on an edge rail, was without springs, and had a water barrel for a tender. It succeeded in drawing a weight of thirty tons up a considerable gradient at a rate of four miles an hour, and was 'the most successful working engine that had yet been constructed.' Still, there was little or no saving over the cost of horse power, neither was the speed greater than that which could be obtained on the old system, and Geo. Stephenson's engine would have turned out little better than a failure, had he not made an opportune discovery, which more than doubled the speed hitherto attained, without extra expense. His discovery consisted simply in making use of the waste steam—which had hitherto been allowed to blow itself away—to excite the combustion of the fuel, by adding velocity to the draught from the furnace, and thus create a larger volume of steam for working purposes. He had scarcely made this discovery, before he set to work to build a second locomotive; and, taught by his first experience, his second was constructed in so skillful and superior a manner, that it may in truth be termed the father of all succeeding locomotives, since its great fundamental principles remain in operation to the present day.

(To be Continued.)

THE FRENCH WIZARD AND THE ARABS.

EVERY one has seen or heard speak of the great Robert Houdin. Besides being the prince of conjurers, he is an able mathematician and mechanician, and his electric clock, made for the Hotel de Ville of his native town of Blois, obtained a medal at the Paris Exhibition. It is not generally known that he was sent to Algeria by the French Government on a mission connected with the black art—probably the first time that a conjuror had been called upon to exercise his profession in Government employ.

Some details of his expedition have just been published. Its object was to destroy the influence exercised among the Arab tribes by the marabouts, an influence often mischievously applied. By a few clumsy tricks and impostures these marabouts pass themselves off as sorcerers; no one, it was justly thought, was better able to eclipse their skill and discredit their science than the man of inexhaustible bottles. One of the great pretensions of the marabout was invulnerability. At the moment a loaded musket was fired at him, and the trigger pulled, he pronounced a few cabalistic words and the weapon did not go off. Houdin detected the trick, and showed that the touch-hole was plugged. The Arab wizard was furious and abused his French rival. 'You may revenge yourself,' quietly replied Houdin; 'take a pistol, load it yourself; here are bullets, put one in the barrel, but before doing so mark it with your knife.' The Arab did as he was told. 'You are quite certain now,' said Houdin, 'that the pistol is loaded and will go off. Tell me, do you feel no remorse in killing me thus, notwithstanding that I authorize you?' 'You are my enemy,' coldly replied the Arab; 'I will kill you.' Without replying, Houdin stuck an apple on the point of a knife, and calmly gave the word to fire. The pistol was discharged, the apple flew far away, and there appeared in its place, stuck on the point of the knife, the bullet the marabout had marked. The spectators remained mute from stupefaction; the marabout bowed before his superior; 'Aliah is great!' he said, 'I am vanquished.'

Instead of the bottle from which, in Europe, Robert Houdin pours an endless stream of every description of wine and liquors, he called for an empty bowl, which he kept continually full of boiling coffee, but few of the Arabs would taste it, for they made sure that it came direct from the devil's own coffee-pot. He

then told them that it was in his power to deprive them of all strength, and to restore it to them at will, and he produced a small box, so light that a child could lift it with its finger; but it suddenly became so heavy that the strongest man present could not raise it, and the Arabs, who prize physical strength above everything, looked with terror at the great magician who, they doubted not, could annihilate them by the mere exertion of his will. They expressed this belief; Houdin confirmed them in it, and promised that, on a day appointed, he would convert one of them into smoke. The day came, the throng was prodigious; a fanatical marabout had agreed to give himself up to the sorcerer. They made him stand on a table and covered him with a transparent gauze; then Houdin and another person lifted the table by the two ends, and the Arab disappeared in a cloud of smoke. The terror of the spectators was indescribable; they rushed out of the place, and ran a long distance before some of the boldest thought of returning to look after the marabout. They found him near the place where he had been evaporated; but he could tell them nothing, and was like a drunken man, ignorant of what had happened to him. Thenceforward Houdin was venerated and the marabouts were despised; the object of the French Government was completely attained.

The fashion of 'testimonials' having, it appears, infected even the Arabs, a number of chiefs presented the great French conjuror with a piece of Arab writing, wonderfully decorated, hyperbolic and eulogistic, and to which they were so attentive as to append a French translation. Besides this memorial of his Algerine trip, Houdin has a rosary which he one day borrowed from an Arab to perform a trick with, and which the owner, persuaded that Sheitan in person was before him, refused to receive back.

OUR LANGUAGE.

DICTIONARY English is something very different not only from common colloquial English, but even from that of ordinary composition. Instead of about 40,000 words, there is probably no single author in the language from whose works, however voluminous, so many as 10,000 words could be collected.—Of the 40,000 words there are certainly many more than one-half that are only employed, if they are ever employed at all, on the rarest occasions. We should any of us be surprised to find, if we counted them, with how small a number of words we manage to express all that we have to say, even with our lips or even with the pen. Our common literary English probably hardly extends to 10,000 words, or common spoken English hardly to 4,000. And the proportion of native or home-grown words is undoubtedly very much higher in both the 5,000 and the 10,000 than it is in the 40,000.—Perhaps of the 30,000 words, or thereabouts, standing in the dictionaries, that are very rarely or never used, even in writing, between 20,000 and 25,000 may be of French or Latin extraction. If we assume 22,500 to be so, that will leave 5,000 Teutonic words in common use; and in our literary English, taken at 10,000 words, those that are non-Roman will thus amount to about a half. Of that half 4,000 words may be current in our spoken language, which will therefore be genuine English for four-fifths of its entire extent. It will consist of about 4,000 Gothic and 1,000 Roman words. *Dublin University Magazine.*

SOMETHING IN A NAME.

THERE passed through Pera, en route for England, an officer of the Rifles. This man was what the French called a *farceur*, and rejoiced in the rather common name of Smith.—According to the general rule, he left his card at the embassy, and as he had only just received his promotion to a company, the card in question bore on its face the letters Mr A. S. Smith. No notice was taken of the plebeian Smith; but the man was not to be beat, and made a bet that he would be asked to dinner at the Embassy. The aristocratic tendency of the subalterns there was so well known, that the bet was readily accepted, the only condition being that he, Captain Smith, was to receive the invitation without personal solicitation in any shape. Some days passed, and Smith could hardly show his face in the street without inquiries being made as to whether last night's dinner at the Embassy was good or not, how many guests there were, and similar questions. He took all very good humouredly; but he had not been losing his time, for he had caused his card to be reprinted, and this time it stood thus: 'Captain Augustus Stanley Smith, 1st Battalion Rifles, &c., and armed with this he again called at the Embassy, sent up his card, and the following day Captain Augustus Stanley Smith received the invitation which would never have reached the plain Mr A. S. Smith.—*Journal of a Bashi Bazook.*

HOW TO TELL A WOMAN'S AGE (by one of them.) In telling the age of another woman, you multiply by two; but if you are telling your own age, then you divide by two.

How is it that the trees can put on a new dress without opening their trunks? It is because they leave out their summer clothing.