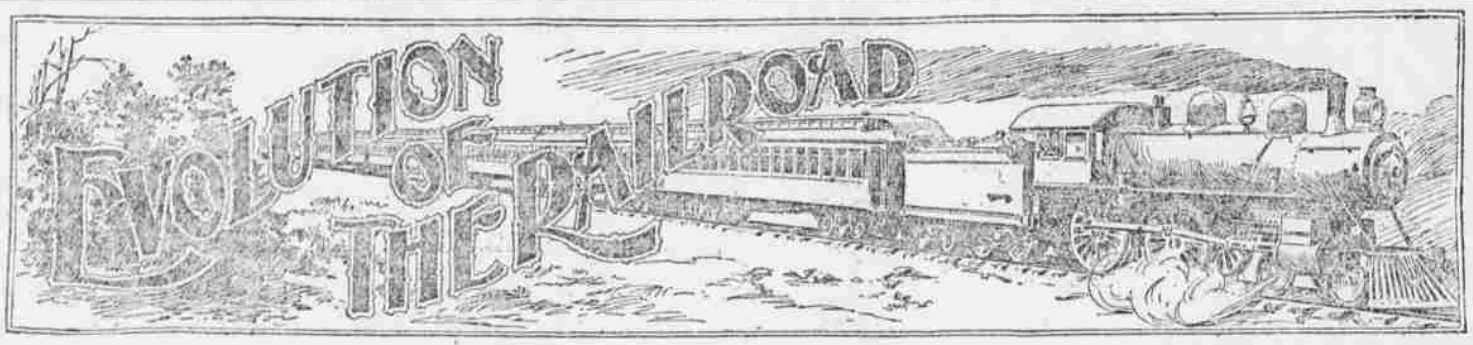


IT is seventy-two years since the first railway in the world was opened to the public for general traffic. The Stockton and Darlington line of England began operations Sept. 27, 1825, with about twenty-one miles of single track. To-day there are over 375,000 miles of railways intercrossing the earth. In the United States alone there are 180,955 miles of tracks, more than enough to girdle the globe fourteen times with single rails, while the combined railway systems of the world would be sufficient to open a trunk line between the earth and the moon, with over 135,000 miles to spare for branch lines and sidetracks. The total mileage of the United States is nearly equal to that of all the other countries put together. Illinois, with over 10,000 miles of tracks, leads all the other States,

GEORGE STEPHENSON.

Pennsylvania ranking next with over 9,000. New York State has nearly 8,000. The District of Columbia closes the list with thirty miles.

The first rail of the Stockton and Darlington road was laid May 23, 1822, and it required three years and four months to complete twenty-one miles of single track. In 1887 the Manitoba system was extended through Dakota, a distance of 545 miles, between April 2 and Oct. 19—a few days over half a year. From the rude beginning in England less than three-quarters of a century ago has grown a stupendous system that has revolutionized the commerce of the world—that has revolutionized the world itself, annihilated space and made subservient to the will of man. There are to-day over $30,000,000,000 invested in the railroads of the world, one-tenth of the total wealth of civilized nations. More than 2,000,000 men are employed in constructing, equipping and operating the railways of the United States. The standing armies and navies of the world approximate in round numbers 3,500,000 men—the wealth destroyers. How much more powerful is the wealth-producing army of American workingmen who have changed the whole basis of civilization from the military to the industrial!

When one studies the evolution of the railway he is lost in wonderment at the giant strides that have been made during a period so comparatively short. In the early stages of its development it met with the strongest opposition, in many instances force being employed to prevent its progress. The stockholders of the canal systems and the stage coach lines, and even certain classes of workingmen under the mistaken idea that the extension of railroads means a decrease in the demand for manual labor, united their forces and fought their imaginary common enemy. Parliament took part in the proceedings, and the promoters of the initial lines were subjected to the most scrutinizing cross-examinations. When the first road was opened a great concourse of people assembled to witness the event, and while a few were there to rejoice if the undertaking proved successful, the majority of the spectators were anticipating the pleasure of seeing the "bubble burst." This opposition continued for many years, and was only dissipated when it had been demonstrated beyond dispute that the commercial interests of the country were advancing to a state that had never been attained before the introduction of the new traffic system.

On this small stretch of track between Stockton and Darlington the great railways of the world had their beginning. But even this small beginning was a long time in coming. It seems strange to us now at the present day, with the wonderful development of steam and electricity brought so vividly before us, and made a part of our daily lives, that men within a period remembered by persons now living should be so blind to the advancement of public and private interests as to actually raise and organize an opposition to a system that has proved a greater benefit to the nations of the earth than all the other projects of civilization combined. To-day we are familiar with the names of great railway kings—men who have operated millions, who have been the life or the death of the stock market by the rise or the fall of a finger. We look with something of veneration at the careers of John W. Garrett and Thomas A. Scott, and even with a mixture of admiration at the wealth producing powers and executive abilities of Cornelius Vanderbilt and Jay Gould. But greater, far greater, than a Garrett, a Scott, a Vanderbilt or a Gould, was George Stephenson, the poor, uneducated, colliery fireman, who worked out, between the long and cruel hours of manual drudgery and slavish toil, the problem of the railway for the traffic of the world. He saw a half century ahead of his time

Opposed by Capital.

Despite the opposition of the moneyed men and the learned engineers of the day he fought his way inch by inch, and by the sheer force and tenacity of his powerful mind brought to a successful completion a project that had been the companion of his thoughts by day and a vision in his dreams by night for many long and anxious years.

To George Stephenson and to him alone belongs the credit of the magic development of the railway. From the moment when a boy he completed his first clay model of a stationary engine; from the time when the steam hissed in his ungainly "Blucher" locomotive to the day when he saw his train rushing on toward Liverpool he nurtured the idea of a grand traffic way, and when he died it was with the peace of soul of a man whose life has been one of enduring usefulness, of unceasing benefit to his fellow-man.

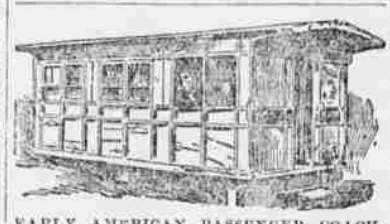
The railway antedates the invention of the practical locomotive, although the history of the one is contemporaneous with the other. Wooden railways upon which coal was drawn from the mines by horses were in use at an early day in Northumberland and at Wylam, where Stephenson's father worked, the first locomotive was put in operation between the coal pit and the loading quay. In 1791 Saint-Fond, a French traveler, spoke in high terms of the colliery wagonways in England, which greatly facilitated the work of the horses, and he strongly urged upon his own countrymen the economy with which coal was thus hauled to the shipping places as an inducement to them to adopt a similar mode of transit. Wagon roads of the same character were laid in the colliery districts of Scotland at a comparatively early period. During the Scotch rebellion in 1745 there was a railway between the Tranent coal pits and the small harbor of Cockinzie in East Lothian. These wooden tracks were the germ of the modern railway. With the advanced ideas of the workmen improvements gradually came and in some collieries thin plates of iron were nailed upon the upper surface of the wooden rails to afford protection from friction. It is probable that the first iron rails were laid at Whitehaven in 1738. Twenty-nine years later five or six tons of rails were cast for the Coalbrookdale Iron Works in Shropshire, and in 1776 cast iron rails nailed to wooden sleepers were laid at the Duke of Norfolk's colliery near Sheffield. The laboring people of the district were so incensed at what they imagined was a trespassing on their rights that they tore up the road, burned the coal piles and doubtless would have seriously injured John Carr, who constructed the line, had he not sought concealment in a wood.

Origin of Tramways.

William Jessop laid a line at Loughborough, in Leicestershire, in 1789, using the cast iron edge rail, with flanges upon the tires of the wagon wheels to keep them from slipping off the tracks. In 1800 Benjamin Outram substituted stone props for timber to support the ends of the rails. This plan was generally adopted and the roads became known as "Outram" roads, and subsequently, being abbreviated, formed the words "tram roads" or "tramways."

In this way the early railways were slowly improved. As yet they were mere toys. Their usefulness was limited to drawing coal out of the mines a short distance to the place of shipment. No one had at this time proposed utilizing them for general traffic purposes. While the rude railways and tramways were being formed in the mining regions the inventive genius of man was busily engaged in the solution of a new mode of locomotion. Thus far the improvements had been almost entirely confined to the roads, and the wagons were still drawn by horses.

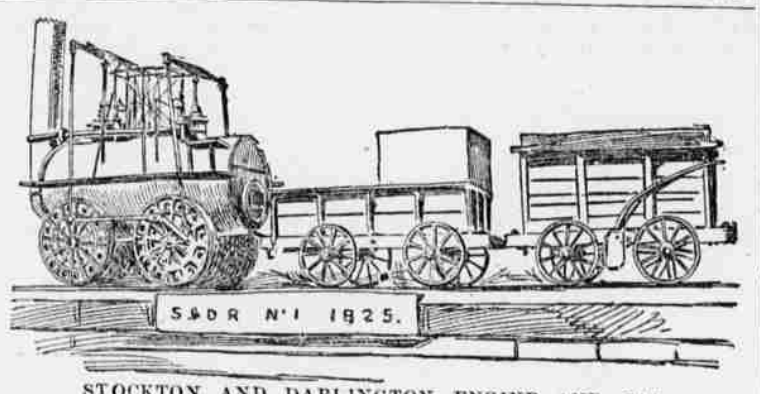
The first person who seems to have conceived the idea of employing steam to move vehicles on land as well as ships at sea was Solomon De Caus, who was locked up at Paris as a madman in 1641. He wrote a book on the subject, portions of which were embodied in the work by the Marquis of Worcester entitled "Century of Inventions." Savery, a Cornish miner, proposed a method of propelling carriages along ordinary roads, but took no practical methods to carry out his views. In 1759 the subject was presented to James Watt, who in the specification of his patent of 1769 gave a description of the engine proposed. On several other occasions the question of applying steam as a motive



EARLY AMERICAN PASSENGER COACH.

power on land was brought to his attention, but he was too busily occupied perfecting his condensing engine to further consider the locomotive. The first actual model of a steam carriage of which there is a written account was made by a Frenchman named Cugnot, who placed it on exhibition in 1763. Afterward he built an engine on the same plan, but when put in motion it projected itself with such force as to knock down a wall that was in the way, and the machine was set aside as a dangerous invention. It is still preserved as a memento of the early efforts toward steam locomotion. In 1772 Oliver Evans, an American, invented a steam carriage to travel on ordinary roads, and obtained from the State of Maryland in 1787 exclusive right to make and operate it. But no practical use ever came of the invention. William Symington, one of the inventors of steam navigation, conceived the idea of utilizing steam in the propulsion of carriages, but the roads in Scotland were in such bad condition that he got no further than to construct a model.

The first model of a steam carriage in England was made in 1784 by William Murdock, the assistant and friend of Watt. Murdock succeeded in making an engine about a foot high that generated enough steam by the aid of a spirit lamp to rush along at quite a rate of speed over a walk a mile in length. One dark night the pastor saw the little machine coming snorting up the path, and, taking it for the "evil one," sprang into the hedges on the side with shrieks of terror.



STOCKTON AND DARLINGTON ENGINE AND CAR.

Richard Trevethick's Success.

About the years 1800 and 1802 the question of building railways for stage coaches was discussed and it was further proposed that stationary engines might be placed at certain distances apart and by means of circulating chains greatly lessen the employment of horses. While these plans were being considered Richard Trevethick, a pupil of William Murdock, built a steam carriage for use on the common highway. He took out his patent March 24, 1802. The carriage had the appearance of an ordinary stage coach. The horizontal cylinder, the boiler and the furnace box were placed in the rear of the hind axle, and to the credit of the inventor it may be said that this was the first successful high pressure engine constructed on the principle of moving a piston by the elasticity of steam against the pressure only of the atmosphere. In addition to being well constructed, Trevethick's steam carriage possessed the quality of moving quite rapidly along the roadway.

GRASSHOPPER LOCOMOTIVE.

There were many inventors after Trevethick who sought a motive power to supersede horses, and while some produced very meritorious works none met the tests required of them. There were Blenkinsop of Leeds, who had an engine with toothed wheels that ran upon a cogged rail; Chapman of Newcastle, who employed a system of chains, and Brunton of Derbyshire, who invented a "mechanical traveler" to go upon legs, working alternately like those of a horse. These and similar contrivances projected about the same time show that invention was actively at work and that many minds were trying to solve the traction problem. Blackett, a colliery owner of Wylam, whose tramway ran by the house where George Stephenson was born, was one of the most persistent of capitalists in his endeavors to obtain a locomotive to haul his coal wagons. He had tried several of the unwieldy inventions of the day and was becoming the laughing stock of his acquaintances, who regarded him as a monomaniac on the subject of steam motive power.

While Blackett was experimenting at Wylam George Stephenson was racking his brains to the same end at Killingworth, where he had been appointed engine-wright of the collieries. Blackett paved the way for Stephenson. Profiting by the failures of the locomotives of the past, Stephenson planned and constructed his first locomotive in 1814, naming it My Lord, after Lord Ravenswood, the principal owner of the Killingworth colliery, who advanced the money. This locomotive, which was afterward known as the Blucher, while a great improvement on all previous machines, was very cumbersome and clumsy. It, however, answered the purpose for which it was intended very well and was regarded at the time as a wonderful piece of mechanism. The inventor made many engines after that, but none gave him as much satisfaction as this first rude locomotive.

Among the men of this period who were forming projects for the construction of railways in the important districts of population were William James of West Bromwich and Edward Pease of Darlington. James was exceedingly interested in the question of traction power, and though he had made no personal inventions he performed as great a service to the public when he found and appreciated George Stephenson. As early as 1803 James published an article in which he stated he contemplated the projection of a railway between Liverpool and Manchester. He had many other railway propositions under way, but nothing came of them, except to stimulate the demand for better transportation facilities.

Edward Pease was a man of an entirely different character. He was not so ambitious as James, and it seems he at first only contemplated a horse tramroad between Stockton and Darlington, but as he proceeded with the project and after he had had an interview with Stephenson he became an earnest convert to the locomotive system. What Pease first contemplated was the means of selling coal at the stations along the line of the proposed railway. He did not dream of the outlet that would be afforded to other markets, and such a thing as a passenger conveyance never entered into his calculations. After one unsuccessful attempt in parliament the Stockton and Darlington railway act was finally passed April 19, 1821. The projectors did not originally contemplate the employment of locomotives, for in the act they provide for the making and maintaining of the tramroads for the passage upon them "of wagons and other carriages, with men and horses or otherwise." The public were to be free "to use with horses, cattle and carriages" the roads formed by the company on payment of the authorized rates between certain hours. It is clearly obvious from this that the projectors of the line had no clear conception as to the scope and operations of their railroad.

Some time elapsed after the passage of the act for the construction of the railway before any steps were taken to carry it into effect. Toward the close of 1821 Stephenson called on Pease and strongly urged the adoption of the locomotive on the new road. The inventor made so good an impression that he was soon after appointed engineer of the line, conducted a personal survey of every foot of the route and began active preparations for building the road.

Estimate of the Cost.

In making his first estimate of the cost he set down £6,200 for stationary engines, not even mentioning locomotives. His reasons for this will be apparent when it is known that the whole question of steam locomotive power was in those days, among practical and scientific men alike, largely in doubt. He preferred to quietly impress upon the stockholders the wisdom of adopting a method he was confident would prove a complete success. After visiting Stephenson's locomotive at Killingworth Pease and another stockholder became convinced that it was the proper system, and in 1823 an amended act was passed permitting the use of this power.

Two years later the road was opened to the public, and from the start proved a great success. The rails were of malleable and cast iron and the gauge was four feet eight and one-half inches. The first engine, the Active, that was put on the line, was constructed by George Stephenson. It weighed about eight tons, and was capable of drawing about forty tons, in insignificant contrast with the American "consolidation" locomotive of to-day, weighing fifty tons and able to haul on a dead level over 24,000 tons, while more powerful engines are still being designed.

No sooner did the coal and merchandise trains begin to run than new business relations sprang up between Stockton and Darlington, and the increase in freight traffic called into existence a new passenger transportation. Before his plant was put in operation an attempt had been made to run a stage coach between Stockton, Darlington and Barnard Castle three times a week, but owing to the want of support it was discontinued. However, after the railway began running the stages were again put on and did a thriving business. The railway company, recognizing the importance of this branch of service, started the first passenger coach, the Experiment, Oct. 10, 1825, a fortnight after the opening of the line. It was drawn by one horse and performed the journey daily each way between Stockton and Darlington, accomplishing the distance of twelve miles in about two hours. The fare was a shilling and each passenger was allowed fourteen pounds of luggage free. The Experiment was not operated by the railway company, but was let to Pickersgill and Harland, who paid tolls for the use of the line. This first passenger coach was regarded as a wonderful conveyance at the time, but it would cut a rather poor figure if placed beside the modern drawing-car palace constructed at a cost of $20,000 or more.

Stephenson next constructed and equipped with his locomotive the Liverpool and Manchester Railway, which was opened Sept. 15, 1830. Passengers were carried the entire distance of thirty miles in a little over an hour. Inasmuch as it had been previously considered a great feat for the locomotives on the Stockton and Darlington road to beat the stage coaches and twelve miles an hour had been regarded as absolutely dangerous, this new rate of speed must have been looked upon as something phenomenal. The growth of the railway from this date was rapid, companies being formed in all civilized countries.

America quickly adopted the railway system. As early as 1827 a crude line was opened between Boston and Quincy for the purpose of importing granite for the Bunker Hill monument. In August, 1829, the Carbondale railroad was opened by the Delaware and Hudson Canal Company and extended from Honesdale to Carbondale, a distance of about

B. & O. RAILROAD, 1830-35.

sixteen miles. It was the first road on which a locomotive was used in this country. The engine was built in England, under the direction of Horatio Allen, who enjoyed the distinction of being the first to run a locomotive in America. It was called the Stourbridge Lion and arrived at its destination Aug. 9, 1829.

First Baltimore & Ohio Road.

In May, 1830, the first division of the Baltimore and Ohio Railway, extending from Baltimore to Ellicott's Mills, a distance of fifteen miles, was formally opened, but the passenger service was not inaugurated till July 5 of the same year, owing to the scarcity of cars. Horse power was employed until the road was completed to Frederick, in 1832.

Peter Cooper built a little locomotive in 1829 for the Baltimore and Ohio Railway, and was very much delighted over the fact that on the trial trip he succeeded in beating a horse attached to another car. The York, which was built at York, Pa., was the progenitor of the famous "grasshopper" locomotives so many years in service on the Baltimore and Ohio. Thus did the beginning of the railway system on the Stockton and Darlington line extend over the old and the new world. It has grown mightily during the last two and seventy years, and its possibilities are still unmeasured.

When George Stephenson died, Aug. 12, 1848, his statue, which the Liverpool and Manchester and Grand Junction companies had ordered, was on its way to England, and arrived in time to serve as his monument. Far greater than any monument that mind of sculptor can conceive and cunning hand execute is the enduring monument of his own works and the undying memory of a name made glorious.

AGED EIGHTY-TWO YEARS.

Ladies Who Claim to Be the Oldest Living Twins.

The claim of the Newell brothers of Missouri that they are the oldest pair of twins in the country is disputed by a Wisconsin correspondent. Mrs. H. H. Johnson, recently of Kankakee, Ill., and now of Omaha, Neb., and Mrs. David Noggle of Janesville are one month older. These ladies are the twin children—Polly M. and Anna M.—of Benjamin and Eunice Mosher Lewis, and

AGED TWINS.

were born at Bristol, N. Y., May 29, 1815. They were the youngest of fifteen children. The twins went to Milan, Ohio, when about 17, married there, and in 1873 Mrs. Noggle went to the wilds of Wisconsin to live the life of a pioneer. She and her husband settled at Beloit. Mr. Noggle was the first postmaster of that city. He was a lawyer and was afterward appointed chief justice of Idaho by President Grant. His health compelled him to return to Wisconsin, where he died in 1878, at the house of his son-in-law, Congressman Charles G. Williams. Mrs. Noggle is a woman of native ability and can tell many interesting tales of early life in Wisconsin. The sisters are both in full possession of their faculties and are as active as women of 65.

Curative of Bad Temper.

"When the little girl is naughty," says Miss Jessie M. Fowler, giving a mother directions for curing her small daughter's bad temper, "put on her best gown, and you will see that she cannot withstand its influence."

No man has to serve an apprenticeship in order to learn how to make mistakes.

Whenever you see a man visiting a chiropodist there is something on foot.