

THE EARLY HISTORY OF WHEELED VEHICLES AND RAILWAYS.

NUMBER 1.

"Men of genius have a hard time, I perceive; and must expect contradictions next to unendurable—the plurality of blockheads being so extreme!"—CARLYLE.

Nothing, perhaps in the history of human achievement is more interesting and instructing than the opposition offered by cupidity and prejudice to those great mechanical improvements and inventions which are the just pride and boast of the nineteenth century. We boast that our age is distinguished from all other ages, and endowed with a special wonder and glory by its material triumphs; that we have compressed the huge globe into a neighborhood and brought all its interests within the system of a daily newspaper; that we have caught and harnessed the wild forces of Nature that tear the arteries of the earth and heave volcanoes; that even magnificent Nature herself has been humbled to toil all day at our looms and in our factories, without food, without sweat, and without weariness; and made to run on our meanest messages. Yet all this was accomplished in the face of violent opposition.

It may at first sight seem unreasonable and ungrateful that men, while constantly striving to better their condition, should be constantly opposing those who are contributing most to their success. But in truth, it is an hostility which has its origin in the diversities of temper, of understanding, and of interest which are found in all societies, and which will be found so long as the human mind continues to be drawn in opposite directions by the charm of novelty and the charm of habit. It has been the fate of every man who has ever attempted to enlarge the knowledge, or lessen the sufferings, or increase the comforts of his race, to be withstood by the most unreasonable opposition and well nigh overcome by the most bitter ridicule; and it always must be so. No man, not utterly destitute of all candor and judgment, will deny but that, in some age anterior to the dawn of history, there were fools who opposed the introduction of the alphabet and the plow with as loud complaints and as bitter invectives as our ancestors did that of the stage coach and the penny post; as we in our time have opposed railroads and telegraphs, and as fools, in some age yet far in the future, will resist some new invention or some new innovation of which the world has not now the faintest conception.

The workings of this strange species of human obstinacy, an obstinacy which the accumulated experience of nineteen centuries of progress has not been able to cure, is surely deserving of the greatest consideration, as the proper result of a cause lying deep in the innermost recesses of human nature, and which, while tending to degenerate us into bigoted dotards, has saved us from becoming shallow and reckless empirics. It will be our endeavor, therefore, to relate the history of that cruel opposition, meted out so unsparingly to those wonderful inventions now never mentioned without respect and gratitude in any part of the globe.

Of all inventions, the alphabet and printing press alone excepted, those inventions which abridge distance have undoubtedly done the most for the civilization of our species; and with these we propose to begin. To improve the means of locomotion afforded to man by Nature has been the intricate problem which all nations from the earliest dawn have attempted to solve; but in truth, it is only within the lifetime of the past six generations that anything approaching a solution has been arrived at. Two hundred years ago there did not exist in all England a single navigable canal, not an inch of railway (as we understand the term), not a public conveyance that would bear comparison with the most lumbering farm wagon that can now be found on the prairies beyond the Mississippi, and not a mile of road which the traveler of today would not consider as impassable. The accounts that have come down to us of the state of travel in England under the reign of "Old Rowley, the King," are indeed surprising in the extreme. It was by the highways that both travelers and goods passed from place to place, and those highways appear to have been far worse than the most ruinous roads that can now be found outside of the sheepwalks of Australia or the jungles of South Africa. Thorsby has left us accounts of journeys made with a guide along roads that lead "over most prodigious high hills," "steeper, than the roofs of many houses," of rides "along the edge of precipices that grew to that light and steepness, and with all so exceeding narrow, that we had not an inch of ground to set foot upon to alight from our horses;" and of tramps over highways "full of ice and snow, rougher than a ploughed field, yet hard as iron." Hagbush lane, the principal bridge path from London to the north of England, was worn so deep that the rider's head was beneath the level of the ground on either side, and so narrow as barely to afford passage for a single horseman. Indeed, in many parts, being once in it, to turn back became utterly impossible, such was its extreme narrowness! Nor does this seem to be the exception rather than the rule. John Marriott has left us a humorous ballad on the "Devonshire Lane," which certainly justifies the belief that that "bit of the road" was in a condition quite as ruinous. Even on roads which the Englishmen of that day were accustomed to regard as the best, the ruts were deep, the descents precipitous, and the mud often lay so thick that all communication was cut off for months at a time, between towns separated by scarcely a score of miles.

Over such roads as these, as may well be supposed, the only practicable method of traveling was on foot or on horse. The rich rode: the poor walked. What the latter lost in comfort and speed they more than made up in safety, for the dangers of the road were by no means confined to its rugged-

ness. The mounted highwayman, a marauder known to this generation only from books, was to be found on every main road. The members of Parliament, the country gentlemen, and the rural merchants traveled in bands from the remote counties to the capital, armed with swords and pistols, and in hourly fear of being stopped and plundered by Turpin or Bradshaw, Duval or Macheath, or the hundred other celebrated banditti who infested the great North Road, Hounslow Heath or Shooter's Hill. Justices rode the circuits in jack boots, the bar following on foot, surrounded by a numerous escort armed to the teeth. Indeed a sum of money, called "dagger money," was annually contributed by the sheriff for the purpose of providing such escort with weapons.

Such a state of affairs in our day would be made the subject of "indignation meetings," "reform associations," and loud public demands for improvement. But with themen of Charles II's time, the case was quite the reverse; they vigorously resisted improvement; and it was not till many toll bars had been violently pulled down, and some blood shed, that a good system of road repairs was established; and not till the stage coach had been made the subject of much heated discussion, and numberless grave pamphlets and petitions to Parliament for its suppression had appeared that it ceased to be looked upon as a crying evil. This latter mode of conveyance was first introduced into England in the closing days of the Protectorate, but did not excite much public interest till the spring time of 1669, when a daring innovation was attempted. It was announced that a vehicle described as the "Flying Coach" would make the journey, "Providence permitting," from Oxford to London between sunrise and sunset. This spirited undertaking was solemnly considered and sanctioned by the heads of the University, and appears to have excited the same kind of interest which is excited in our day by the opening of a new railway. The success was complete; but with the boasts of its supporters were mingled the complaints and invectives of its enemies. Large interests had been unfavorably affected, and as usual many were disposed, from stupidity and obstinacy, to clamor against the innovation simply because it was an innovation. In John Crasset's "Reasons for Suppressing the Stage Coaches," published in 1672, they are denounced as one of the greatest evils that had happened of late years to the kingdom; mischievous to the public, destructive to trade, and prejudicial to lands. The breed of horses would be destroyed, and men would grow careless of good horsemanship; the Thames, that had so long been the important nursery of seamen, would cease to be the chief thoroughfare from London up to Windsor and down to Gravesend; and saddlers and spurriers would be ruined by hundreds. It was vehemently argued that those who traveled in coaches became weary and listless when they rode a few miles and were unwilling to get on horseback, "not able to endure frost, snow, and rain, or to lodge in the fields"; that to save their clothes and keep themselves clean and neat, people rode in coaches; that this was ruinous to trade, "for that most gentlemen, before they rode in coaches, used to ride with swords, belts, pistols, portmanteaus, and hat cases, which in these coaches they have little or no occasion for"; and that after traveling two or three journeys on horseback their "clothes were wont to be spoiled; which done, they were forced to have new very often, and that increased the consumption of the manufactures and the employment of the manufacturers, which traveling in coaches doth no way do." Such were the cogent reasons for which our worthy forefathers demanded that the stage coach should be "put down." How it ultimately triumphed over all opposition, and became, with its rosy gilled coachman and facetious guard, its upsets and break downs, its "outsides" and "insides," a peculiarly English institution, is familiar to all readers of English novels for three generations back.

The Scientist.

Mr. Proctor recently asked for a single word, which, without being objectionable, should convey the meaning of "man of science." Mr. Gosse has recently suggested the name "scient"—a word which receives the support of Mr. A. J. Ellis, who, in the *Academy* for September 19, says: "I beg leave formally to introduce a scient into this heterogeneous company (from 'an incumbent', through 'a president', to 'an insolvent'), and to propose that this strictly formed dissyllable should take the place of the American barbaric trisyllable 'scientist'." A 'scient' would not mean one who 'possesses knowledge in general' so much as one who rejects all but knowledge for the foundation of hypotheses, and therefore constructs only with such materials as he already 'knows'. A 'scientist' would then be an 'adherent to sciences.' It will be seen, however, from the letter of a correspondent that the word is not entirely unobjectionable, as it may be confounded with Science when it is spoken in the plural.—*English Mechanic*.

We suggest that our cousins call him the "sci-ist," which will be O. K., used in the singular or plural.

Cause of Some Blasting Accidents.

One cause of accident in blasting, but little understood, and which applies to powder as well as nitro-glycerin, is thus stated: "The blaster, not aware that he is a walking charge of electricity, proceeds to his work, inserting cartridge after cartridge of nitro-glycerin, until he comes to the last, which is armed with the electric fuse. The moment his hand touches one of the naked wires, the current passes through the priming, and explosion follows. Let a blaster, before he handles these wires, invariably grasp some metal in moistened contact with the earth, or place both hands against the moist walls of the tunnel."

Buying a Horse.

The following hints on examining a horse appear in *The Maryland Farmer*. They contain much good advice to the non-professional dealer, but fail to cover all the defects a horse may possess. But the chances are that the purchaser who gets a horse free from every defect herein enumerated will have a pretty sound animal.

Examine the eyes in the stable, then in the light; if they are in any degree defective, reject.

Examine the teeth to determine the age.

Examine the poll or crown of the head, and the withers, or top of the shoulders, as the former is the seat of poll evil, and the latter that of fistula.

Examine the front feet; and if the frog has fallen, or settled down between the heels of the shoes, and the heels are contracted, reject him; as he, if not already lame, is liable to become so at any moment.

Next observe the knees and ankles of the horse you desire to purchase, and, if cocked, you may be sure that it is the result of the displacement of the internal organs of the foot, a consequence of neglect of the form of the foot, and injudicious shoeing.

Examine for interfering, from the ankle to the knees, and if it proves that he cuts the knee, or the leg between the knee and the ankle, or the latter badly, reject.

"Speedy cuts" of the knee and leg are most serious in their effects. Many trotting horses, which would be of great value were it not for this single defect, are by it rendered valueless.

Carefully examine the hoofs for cracks, as jockeys have acquired great skill in concealing cracks in the hoofs. If cracks are observable in any degree, reject. Also both look and feel for ringbones, which are callosities on the bones of the pastern near the foot; if apparent, reject.

Examine the hind feet for the same defects of the foot and ankle that we have named in connection with the front foot. Then proceed to the hock, which is the seat of curb, and both bones and blood spavins.

The former is a bony enlargement of the posterior and lower portion of the hock joint; the second a bony excrescence on the lower, inner, and rather anterior portion of the hock; and the last is a soft enlargement of the synovial membrane on the inner and upper portion of the back. They are either of them sufficient reason for rejecting.

See that the horse stands with the front feet well under him, and observe both the heels of the feet and shoes to see if he "forages" or overreaches; and in case he does, and the toes of the front feet are low, the heels high, and the heels of the front shoes a good thickness, and the toes of the hind feet are of no proper length, reject him; for if he still overreaches with his feet in the condition described, he is incurable. If he props out both front feet, or points them alternately, reject.

In testing the driving qualities, take the reins while on the ground, invite the owner to get in the vehicle first, then drive yourself. Avoid the display or the use of the whip; and if he has not sufficient spirit to exhibit his best speed without it, reject. Should he drive satisfactorily without, it will then be proper to test his amiability and the extent of his training in the use of the whip.

Thoroughly test his walking qualities first, as that gait is more important in the horse of all work than great trotting speed. The value of a horse, safe for all purposes without blinds, is greatly enhanced thereby.

Purchase of the breeder of the horse if practicable; the reasons are obvious.

MR. LE NEVE FOSTER, an English Government Inspector of Mines, has given notice to the managers of Cornish mines to comply with the act, and remove their vertical ladders and put them "on the lay." This is an alteration which will prove a great boon to the working miners. It is a terrible task for a man to climb up vertical ladders, sometimes from 180 to 260 fathoms deep, after working, perhaps in bad air, for eight hours. The climbing of these ladders has given the miners a peculiar complaint in the lungs, unknown to miners who ascend and descend in any other way.

Recent American and Foreign Patents.

Improved Grain Cleaner.

Samuel B. Johnson, Oswego, N. Y.—This invention contemplates the improvements of grain cleaners by a novel organization of elements that relieves the grain of all dust or chaff in a speedy and efficient manner, the machine itself being cheaper in construction and doing its work more economically than those now known to the public.

Improved Steam Trap.

William H. Jenkins, Philadelphia.—The object of this invention is to reduce the cost and increase the reliability and general efficiency of steam traps of the class in which arising and falling float is employed to operate the valve or valves that control the discharge of the water of condensation accumulated in or received from the connected steam-heating coil pipe or vessel. The invention consists in providing a hollow float with a tube through which steam is admitted, and by which the water condensed therefrom escapes into the chamber of the trap. The float has no other outlet save the tube. The invention further consists in a weighted valve for discharging the water which fills the lower portion of the trap below the line of buoyancy of the float. The invention also consists in the construction of the filter through which the water, condensed in the steam-heating coil, pipe, or vessel, flows into the trap.

Improved Fence.

William C. Banks, Como, Miss.—This invention consists in forming a fence of rails, stakes, posts, and blocks, so that it is entirely protected against winds, floods, or storms, and, being without tenon or mortise, may be constructed at a very small expense.

Improved Water and Gas Meter.

Thomas M. Snank, St. Albans, W. Va.—This invention consists in novel and greatly improved means for rocking the valve which admits and allows the discharge of the fluid. The invention not only simplifies the instrumentalities by which the oscillation is produced, and thereby greatly lessens the liability to get out of order, but insures perfect accuracy and uniformity of action in the measurement.