Travel

Yesterday
To-day and
To-morrow


NATIONAL RAPID

TRAVEL

Yesterday, To-day and To-morrow

Yesterday

WHEN sufficient time has elapsed for the events of the nineteenth century to be seen in their true perspective there is no room for doubt that the tremendous improvements in the methods, facility and speed of communication and transportation will be regarded as the crowning achievements of that century of progress.

In the early years of the century not only were the means of travel and communication miserably inefficient, but on the part of the masses of the people there was a disposition to "let well enough alone" and to resist all projects for improvement. From this it will be noted that the contrast in sentiment between the beginning of the nineteenth and twentieth centuries was as marked as the difference in

the means and efficiency of communication, for the closing days of the century in which the steam engine, the steam boat, the telegraph, the telephone, the electric car, the bicycle, the motorcycle, the automobile, followed one another in rapid succession, found an insistent demand for still further improvements in transportation methods and above all urgent need for greater speed.

In reading the history of the nineteenth century, one cannot fail to be impressed with the incredulity which marked the attitude of the public toward every invention. To record the objections that were opposed to the steam railway in England alone would fill a volume, but we cannot refrain from quoting a few of these,

One of the early stage coaches. The speediest means of travel and a picturesque feature of life in the early days of the nineteenth century.

which, in the light of present day knowledge, appear extremely ludicrous.

> Much use of a coach, makes us lose the benefit of our legs.
> —Seneca.

In 1800, the English stage coaches, running on the best roads and under the most favorable circumstances were able to maintain an average speed of 8 to 9 miles an hour, and this was considered almost wonderful as may be gathered from the following: "It might have been supposed," writes Porter, "that to attain so great a rate of speed as ten miles an hour, the personal safety of passengers would be greatly endangered, but the very contrary is the fact so that nothwithstanding the rapidity with which we are whirled along, the number of accidents is actually lessened, a result produced by the better construction of the carriages.....and the superior character of the drivers."

De Quincey, writing on the same subject, said: "Seated on the old mail coach we needed no evidence out of ourselves to indicate the velocity. We heard our speed, we saw it, we felt it.....and this speed was not the product of blind insensate agencies, that had no sympathy to give, but was incarnated in the fiery eye-balls of the

noblest among brutes, in his dilated nostrils, spasmodic muscles and thunder-beating hoofs." Note the veiled reference in the "insensate agencies" to the steam engine which was just then in its incipient stage.

Even so great an authority as Lord Eldon, in commenting on the opening of a steam railroad, said: "I am sorry to find the intelligent people of the North country gone mad on the subject of railways."

Still more amusing was the attitude of the "Quarterly Review," one of the most influential magazines of the period, which expressed the hope that "the Parliament would, in all railroads it may sanction, limit the speed to eight or nine miles an hour, which is as great as can be ventured upon with safety." By a clause contained in the charter of the first railroad, the speed was limited to twelve miles an hour, and when it was proposed to increase the speed to thirty miles, it was claimed that "such fearful velocity would, without doubt, have the most disastrous effects upon the circulation of the blood and the vital organs."

Dost thou love life? Then do not squander time, for that is the stuff that life is made of.

—Ben Franklin.

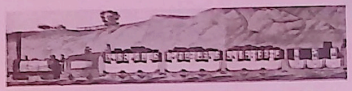
One of the first passenger engines built by George Stephenson, who, in 1816 patented engines that would travel 10 miles an hour—without a load.

In spite of the numerous obstacles to be overcome and the unfriendly attitude of influential persons to the introduction of the steam railroad, of which we have cited only one or two instances, there were not lacking those who saw the tremendous possibilities of the railroad, as may be observed from the following quotation from Gray's Observations on a Railroad for the Whole of Europe, written in 1820. "Here is the mainspring of the civilization of the world; all distances shall disappear;

people will come here from all parts of the continent without danger and without fatigue; distances will be reduced one half; *companies will be formed; immense capital paid and invested;* the system shall extend all over countries; emperors, kings and governors will be its defenders; and this discovery will be put on a par with printing."

A newspaper account of the opening on September 15th, 1830, of the Liverpool and Manchester railway, the first of any magnitude in England, observed: "The engine started off with this immense train of carriages and such was its velocity that in some parts the speed was frequently twelve miles an hour. Even this demonstration, however, did little to convince the sceptical for when another company later in the same year applied for a charter, a prominent engineer ridiculed the claims of the promoters that, "we shall see engines traveling at the rate of twelve, sixteen, eighteen or twenty miles an hour" and stated that, "nothing could do more harm toward their general adoption than the promulgation of such nonsense." Yet in spite of such prejudice, opposition and discouragements, new lines of railroad were projected and constructed, and soon many of those whose opposition had been most pronounced were eager to avail themselves of the opportunities offered by railway enterprises for profitable investments, and the foundations of the fortunes of many of the wealthiest families in Europe and America were laid in the beginning of the railway age.

The first railway passenger coach, built in England in 1825. The drivers' seats furnish mute evidence that the breaking down of the "Iron Horse" might at any moment necessitate recourse to the more dependable coach horses.



A first class passenger train on the Liverpool and Manchester Railway, 1830. In the second and third class trains the coaches were uncovered.

The prophecy of George Stephenson that the day would come when it would be "cheaper for a working man to ride by rail than to

> Time is the most valuable thing that a man could spend.—
> Theophrastus.

walk," has long since been fulfilled in every city and town of importance in the world.

Popular prejudice having been overcome, increase in speed was rapidly accomplished and as early as 1842, on the Great Western Railway of England, a distance of 53 miles was covered in 47 minutes. This, of course, was an exception, but it served to whet the appetite of the public and demands for greater speed became more and more insistent.

To-day

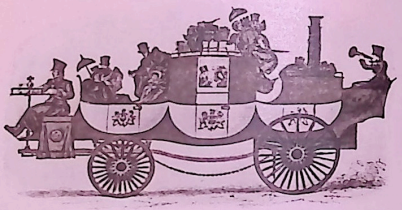
THE first railway in the United States was built to haul granite from the quarries at Quincy, Mass.; this was in 1827; later in the same year a second railway was completed from the coal mines to the Lehigh River at Mauch Chunk, Pa., a distance of nine miles. In 1828 the Delaware and Hudson Canal Company built a railway from its coal mines at Honesdale, Pa. These were followed in quick

The Royal train, operated between London and Birmingham in 1840.

succession by the Baltimore and Ohio, the Mohawk and Hudson, the South Carolina, the Camden and Amboy, the Ithaca and Oswego and the Lexington and Ohio. All of these roads, with one exception, were operated by horsepower. In January, 1828, the Delaware and Hudson Canal Company imported three locomotives from England and these were the first locomotives operated in America. In 1830, however, the first American locomotive was built at the West Point Foundry, thus beginning one of the most important industries of the United States. From that time to the present has been one continued story of improvement in comfort, safety and speed, but it has long been apparent to the thoughtful observer that so far as the steam locomotive is concerned, the limit of safe speed has been attained. In 1881, the first successful application of electricity as a motive power was made, and it was freely predicted that through this

agency much higher speed would be attained than is possible with steam. These expectations have been in a measure realized, but it is now generally conceded that the full possibilities of electricity as a motive power can only be realized by radical changes from the present type of railroad tracks and cars.

The reason for this is very plain. Regarding the locomotive as a huge projectile, which in effect it is, a simple law of physics tells us that its tendency is to travel in a straight line which is "the shortest distance between two points." It is, therefore, obvious that at every curve in the track the natural tendency of a



In 1821 steam carriages for use on the highways were first introduced They were slow and unprofitable and were finally abandoned in 1843 until the invention of the high-speed gas engine in 1884 created new interest in self-propelled road carriages.

locomotive is to leave the rails and continue on its straight course. Speed therefore is not so much a question of power but of ability to keep the track and travel in safety.

To-morrow

EFFORT to overcome the limits to speed imposed by the conditions referred to have engaged the attention of scientific and mechanical minds for many years. A great variety of plans have been proposed, the most promising involving the use of a single rail in place of the present two-rail system. A speed of 110 miles an hour has been easily attained, but two factors have developed to prevent the general adoption of all adaptations of the mono-rail system hitherto proposed. Either they have been lacking at the point of safety or the cost of installing the system has precluded the possibility of operating at a profit.

The principle of the gyroscope has claimed some attention recently; no difficulty has been met in the development of high speed, but the cost of construction is enormous and even with cars weighing 200 tons they could not be operated at 100 miles an hour without imminent danger of derailment. These difficulties have,

however, been overcome by the Valentine Mono-rail System which is about to be put in operation. The introduction of this system will be the beginning of another new epoch in the history of transportation, one which as compared with present methods will present a greater contrast than between the high-speed, two-track locomotive and the old ten-mile-an-hour stage coach.

On this mono-rail, or single track railway, a speed of 200 miles an hour will be accomplished in absolute safety and with more comfort to passengers than on the ordinary railroad car—there being little or no side to side motion. Think for a moment what this means. The fastest time now being made between New York and Chicago is eighteen hours—by this mono-rail system it will be done in six hours—breakfast in New York, lunch in Chicago. The best time between New York and Washington is now five hours. By this mono-rail system it will take less than 1½ hours. From St. Louis to Chicago now takes eight hours—this mono-rail system will make it in two hours.

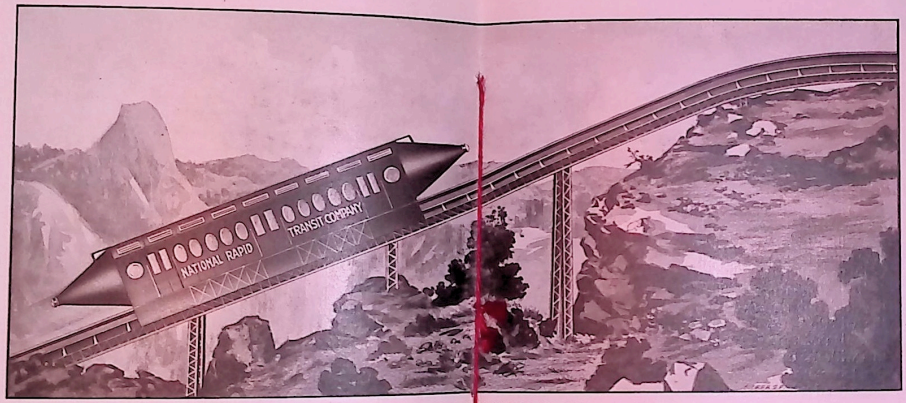
The fastest trains from New York to San Francisco now take four days. When this mono-rail system is completed between these two now far distant cities they will be less than 24 hours apart. Are you inclined to be incredulous? Remember that less than a century ago the claim that a steam engine would travel 12 miles an hour was ridiculed. Doubtless any one at that time who had even hinted at the possibility of traveling by any means at 75 miles an hour would have been considered lunatic, yet much greater speed than this has been accomplished under favorable conditions by the present type of railroad.

The Valentine Mono-railway System possesses advantages over all other railroad systems now in operation in the matter of

Greater speed.
Absolute safety.
Lower cost of right of way.
Lower cost of construction.
Lower cost of operation.
Lower cost of maintenance.

In order that the perfection of this system may be fully understood we will endeavor to explain these advantages as clearly as possible. As the elements of *speed* and *safety* are closely allied we will treat of these under one head.

I'll put a girdle around the earth in forty minutes.
—As You Like It.



CAR OF THE VALENTINE MONO-RAILWAY SYSTEM ASCENDING A 25% GRADE

The above illustration shows how the cars of the Valentine Mono-Railway Elevated System will appear in ascending a 25% grade. This is an unique feature of this system which results in numerous advantages. It shortens distances, therefore reducing the time between two points and it effects a tremendous saving in cost of construction, because tunneling, grading and filling in are almost entirely done away with.

Speed and Safety

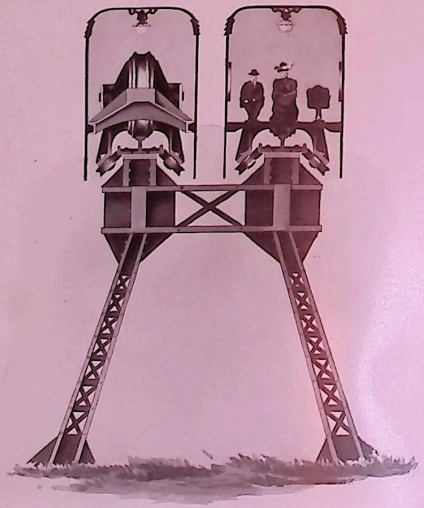
Every car of this mono-rail system is a separate unit, that is to say, it has its own power and therefore it may be operated independently or in trains as circumstances require. By reference to the accompanying illustration it will be noted that each car has two trucks.

This is a man's invention and his hand.—

As You Like It.

In each of these trucks are five drive wheels consisting of one large powerful drive wheel and four smaller drive wheels which also act as guide wheels and are grouped around the specially constructed rails in such a manner as to make derailment absolutely impossible. As stated; each of these wheels is a drive wheel, direct motor power being applied to each wheel and consequently all will revolve at the same rate of speed. These ten live wheels in each car all being in contact with the rail at the same time will make it possible to develop full speed very rapidly. As all of the wheels may be reversed together the car may also be brought to a quick stop. Compare this with the ordinary passenger train in which the locomotive must start in motion 100 or more dead wheels before speed is attained and offset the momentum acquired by these same wheels before the train is brought to a stop. By a simple pneumatic device, under the perfect control of the engineer, the lower wheels in each truck may be held against the rail at any pressure desired. By this means a 10-ton passenger car—which is the full weight of a passenger car with its load—will secure a greater grip on the rail than a 250-ton locomotive. This powerful grip on the rail will enable these cars to ascend a 25 per cent grade at high speed. They will travel a straight line up grades and reach an elevation in one mile that the ordinary locomotive will wind around twelve miles to attain or else travel through smoky tunnels that have cost millions to build. The pneumatic pressure which makes grade-climbing easy for this mono-rail system also acts as an additional measure of safety because it can be used to bring the car to a stop in an incredibly short space of time. This, too, without any jar because the pneumatic pressure acts as a cushion that takes up all side motion. Look at the illustration again. Perhaps you will ask the question, "Suppose a wheel should break?" First let us say that such a contingency is very remote, because the wheels are made of wrought nickel steel. They will be much stronger than regular locomotive wheels

"Electric telegraphs, printing, gas, tobacco, balloons and steam
Are little events that have come to pass, since the days of the old regime."



Cross section showing track construction and relative positions of the main driving and supplementary guide wheels in the cars of the Valentine Mono-Railway Elevated Rapid Transit System.

that are made with cast iron centers and steel treads and even these with the enormous weight imposed on them seldom break. However, we will suppose that a wheel of this mono-rail car should break. Nay, we will suppose that every wheel should break at the same time and while the car is speeding along at 200 miles an hour. Even in such a remote contingency the car would not leave the track because it is provided with a simple but efficient safety clutch which is always in adjustment following the rail and making it a physical impossibility to derail the car.

> The present is the living sum-total of the whole Past.
> —Carlyle.

The accident bulletin issued by the Interstate Commerce Commission, covering the months of July, August and September, 1907, shows that in the short space of three months 1,339 persons were killed and 21,724 persons were injured in railway accidents. As derailment is the most prolific source of railroad wrecks, the adoption of this non-derailable car will mean a great annual saving in human lives.

By reason of its elevated tracks this mono-rail system is absolutely immune from the

delays and dangers incident to track obstructions, snow blockades and washouts which cause so many annoying delays and disastrous wrecks on surface roads.

A specially devised system of block and electric signals will make a rear-end collision absolutely impossible on the darkest night or in the thickest weather. To sum it up, you will in a short time be able to travel by the Valentine Mono-railway System at 200 miles an hour more safely and more comfortably than by any other system. We will now proceed to explain why the right of way can be secured at much lower cost than for a regular railroad.

Right of Way

YOU have already noted from the illustrations that an elevated track is used for this mono-rail system. The height of the track will vary from 3 feet to 30 feet, or an average of 16 feet. Where a surface road cuts a wide strip out of a land-owner's property and separates it in two parts, this road will pass over it at such a height as to practically offer no obstruction. It could be built through an orchard without removing a single tree and will interfere but slightly with cultivation, little more than a line of telegraph or telephone poles. Stock, wagons and agricultural machinery can pass under it at any point without danger or inconvenience, therefore it will not meet with one-tenth of the opposition to surface roads. Franchises to enter cities will readily be secured at much lower cost, because there are no grade crossings, the tracks will pass over streets, buildings and all other steam and electric railroads. Unimportant narrow streets or even alleys will afford all the space necessary for a double track of this system and even these will not be obstructed. When the enormous sums which present railroad systems have been compelled to pay for rights of way are considered it will be evident that the advantages of this mono-rail system in this respect can hardly be over-estimated. Closely allied to the subject of right of way is the cost of construction.

Nothing has such power to broaden the mind as ability to investigate systematically and truly all that comes under thy observation in life.

—Marcus Aurelius.

Cost of Construction

FROM the fact that this system uses an elevated track it might be inferred that the cost of construction would exceed that of surface roads. The contrary, however, is the case. A double track of this mono-rail system at an average elevation of 16 feet—which is higher than actually required—can be built for less than $60,000 a mile. Elevated systems now in use, all of which are of course

The New York Central's world-famed 20th century Limited: the train that now covers the distance between New York and Chicago in 18 hours.

two-rail systems—cost upward of $120,000 a mile and the cost of building ordinary double-track surface roads ranges from $40,000 to $1,000,000 a mile according as the country traversed is level or mountainous.

The following are the principal factors to explain this lower cost of construction:

In the first place we are not dealing with 100 to 150 ton locomotives and cars weighing 40 tons to 70 tons, but a car of this system with its full complement of passengers will weigh not to exceed ten tons. The elevation of the tracks does away with grading, filling-in cuts, hauling of gravel and ballast and as already explained the ability to ascend 25 per cent grades does away with tunnels and shortens the distances through mountain ranges in the ratio of one mile to ten as compared with ordinary railroads.

A conservative estimate places the cost of a double-track road of the Valentine Mono-rail System between San Francisco and New York at $180,000,000, as compared with $450,000,000 which is the estimated cost of the connecting roads that form the shortest route between these two points at the present time.

Cost of Maintenance

WHEN we compare the cost of maintenance of this mono-rail system with a regular two-rail road we find again a very great difference in favor of the mono-rail. This road being built entirely of iron and steel is practically indestructible and when once built, the only expense will be to give it a coat of paint at intervals of one or two years. The only other attention required will be to keep all bolts tightened and for this labor one man can take care of more mileage than twenty men on the ordinary track, with its constant demand for new ties and comparatively frequent renewal of rails.

A famous German high-speed electric car which attained the speed of 125¾ miles an hour between Berlin and Zossen. The fastest time ever made on any type of railway.

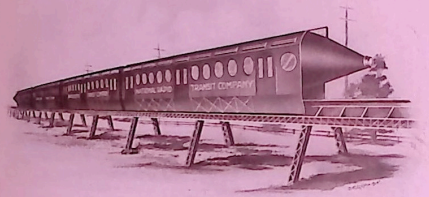
Equipment and Operating Expense

THE cars of this mono-rail system will be built of metal throughout, making them fireproof, sanitary, strong and safe. They will be supplied with every device for the comfort and convenience of the passengers. As shown in the illustration, each end of the car will be tapered in order to minimize the atmospheric resistance which in view of the very high rate of speed at which they will travel is an essential and important consideration. The motive power will be electricity generated by gasoline. The motors will be of the most modern type, compact and light, but exceedingly powerful. Each car will also be equipped with an auxiliary storage battery which will assist in starting and stopping the cars very rapidly. Owing to the extreme

The Two Most Famous Trains in the World

The Empire State Express, New York to Buffalo, probably the best known train in the world, average speed 50 miles per hour.

lightness of the cars and the almost complete absence of friction the power required will be almost infinitesimal as compared with surface roads and a speed of 200 miles an hour will be maintained at a fuel cost of not to exceed 3 cents a mile. Another important advantage is that the cars can remain in continuous service for a much greater length of time than ordinary locomotives which spend so much time in the round-house for cleaning, oiling, coaling and taking water. From these facts it is very plain that the operating expenses of



As a train of the Valentine Mono-Railway System will appear, each car a complete unit. Average speed upwards of 150 miles an hour in absolute safety.

this mono-railway system will be much lower than those of any surface road.

The possibility of attaining high speed has been demonstrated repeatedly. Under perfect track conditions as high as one hundred and twenty-five miles per hour have been attained by steam locomotives and 127¾ miles per hour have been made by an electric car. This enormous speed was however accomplished on a perfectly even and straight track, the

slightest curve or depression would have derailed the car instantly. The fastest mile ever covered by any vehicle was made by a motorcycle at Ormond Beach, Florida, January 22, 1907, in 26⅝ seconds, or 139 miles per hour. Such instances of high speed as these are however exceptions and the fact still remains that 60 miles per hour is the highest speed that can be accomplished with any assurance of safety on surface roads.

Within the last decade there has been a very marked movement from the cities to the country.

Closely allied to this movement is the transportation problem. It means that there must be more, better and quicker means of getting to and from the city and suburbs. This mono-rail system solves the problem because it is adapted to suburban as well as to national service. The rapidity with which the cars are started and brought to a stop without jolt or jar makes it possible to cover short distances as well as long at marvelously high speed and in perfect safety. It follows therefore that adequate suburban service must depend on installation of this mono-rail system.

In some of the larger cities the transportation problem is one of serious concern. In New York, Philadelphia, Boston, Chicago and Pittsburg, millions and millions of dollars have been spent in vain attempts to afford adequate transportation facilities between the cities and their suburbs, and now with all or nearly all available approaches occupied by surface roads, elevated roads, railways, etc., the only way to improve the situation is by great increase in speed.

The invention and perfection of this mono-rail system at this time, therefore, affords another illustration of the truth of the old axiom, "Necessity is the mother of invention," and in view of its many and manifest advantages over present railroad systems at the points of speed, safety and economy it is a reasonable prediction that it will rapidly supersede them.

All United States patents covering the Valentine Mono-Railway Elevated System are owned and controlled exclusively by the

National Rapid Transit Company

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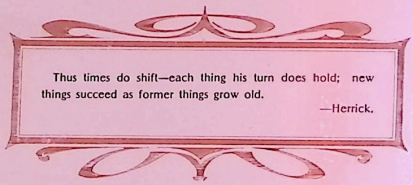

Thus times do shift—each thing his turn does hold; new things succeed as former things grow old.

—Herrick.

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