

Why Electrification of Railroads Would Increase Profits

Steam Less Efficient Than Electricity—How Savings Can Be Effected—Roads That Are Already Electrified

By JOSEPH E. PRESTON

AS time goes fitting across the pages of Mr. H. G. Wells' fascinating book, "The Outline of History," a hundred years or so becomes a mere fly speck on the horizon. It seems incredible but it was not until 1804 that a man named Trevithick adapted a steam engine so that it would serve as a locomotive, and that was the beginning of railroads. They were a little shy on metallurgy back in 1804. Nobody knew how to roll sheet iron and make steel plates, so the railroads had to wait until it was possible to make sheet iron with which to fabricate steam boilers for the locomotives. It was not until 1825 that the first railroad was opened for traffic.

In Mr. Wells' retrospect of the dark abyss of time, the palaeozoic periods, the time of Alexander the Great, the Caesars, Napoleon, we discover that not one of the great men of history, nor a single one of the millions of people over whom they ruled, had the remotest idea of the possibilities of steam as motive power. They were densely ignorant of electricity. The telegraph and telephone, the gas combustion engine and the aeroplane were quite beyond their capacity to invent.

None of the folks who lived prior to such a recent date as 1825 were troubled with the railroads for the very good reason that there were no railroads. When business was bad they couldn't blame it on the railroads. They couldn't kick about rates. They couldn't investigate the railroads. When one reads today the endless discussions about the railroads, their shortcomings, their labor disputes, their high freight rates, their generally high costs and low returns, one gets the feeling that life in the days of the Caesars wasn't half bad.

400,000 Miles of Road

In about the same length of time, some thirty years, that it has taken to overrun the world with automobiles, a net work of railroads spread over Europe. In 1831 railroads began to be built in this country and in a few years railroad building obtained a vogue here undreamed of in Europe. Today

our total length of all railroads is 400,000 miles, while all of Europe has only 270,000 miles. This country has the best railroads in the world, the best equipped and the best managed. The clothes we wear, the food we eat, the houses we live in are assembled by the railroads from widely segregated parts of the country and delivered where needed. Our railroads are the veins through which flows the life blood of the country.

Fifty years ago many locomotives burned wood for fuel. Just as now water tanks are set at convenient in-

tervals along the lines of the road then there were wood sheds. The locomotives of those days were small and crude compared with the huge locomotives of today. It was fun to be an engineer or fireman on those toy locomotives.

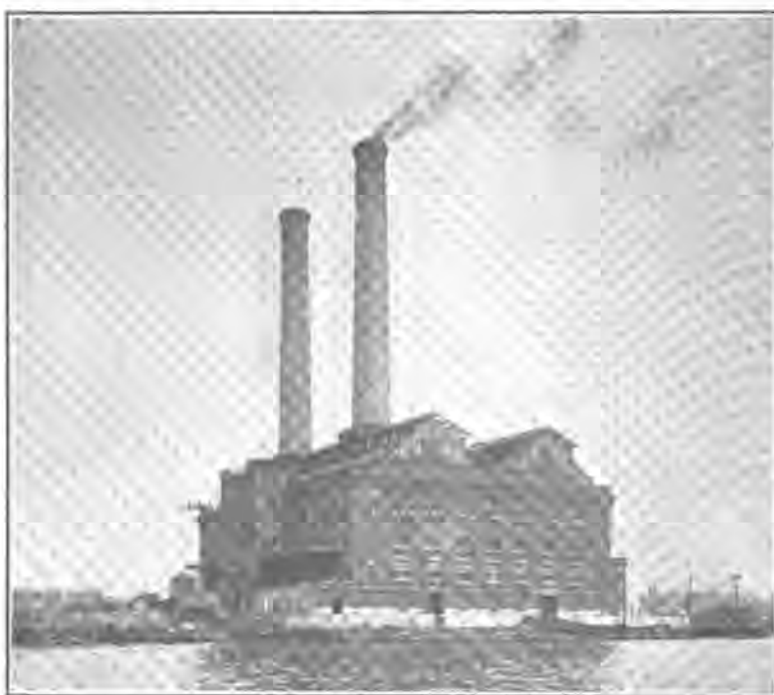
Human Nature Remains the Same

In Mr. Wells' interesting book we read about the Roman and Grecian and Carthaginian galley slaves chained to the oars in the war vessels of those days. Wielding an oar in those picturesque barges of the ancients was mere pastime compared to the task of firing one of our modern locomotives.

Down through all the ages human nature has been pretty much the same. The galley slaves complained of their lot. The firemen complained of their lot. They said they worked harder than anybody else on the road. They wanted more pay. They wanted shorter hours. They wanted this thing and that thing and to enforce their demands they organized the Brotherhood of Locomotive Firemen. They got everything they asked for. They are getting it today, and few there are who begrudge them what they get.

Why the Firemen Are So Important

When the engineers and conductors, the brakemen, the baggage masters, the station agents, the switchmen, the section hands, the shopmen and all the rag tag and bobtail of the railroads saw when the firemen were able to accomplish with their strongly organized brotherhood they got into the game. They organized brotherhoods and claimed affiliation with the firemen. Conductors and brakemen and baggage masters and clerks and shopmen can go on strike and it won't create any serious tieup of the railroads. But when the firemen go on strike they tie up the railroads tighter than a drum. Over night they can paralyze business



View of the New York Central power plant at Port Morris, where the power is manufactured that propels the Central trains over the electrified portion of the system

Then came coal, dirty, sooty, grimy coal. The engineers and firemen had to quit wearing white boiled shirts. They ceased to be heroes to the pretty girls and small boys along the line. They were smooch-faced, blue-shirted mechanics. Half the romance of railroading departed when the coal-burning locomotives came in.

Then they began making the locomotives bigger and bigger. At the Colum-

Bigger Locomotives

Then they began making the locomotives bigger and bigger. At the Colum-



YESTERDAY

The famous DeWitt Clinton engine, the first steam train over the New York Central lines, wood-burning and capable of carrying a "load" of 20 persons and baggage

and put everything all askew. It takes a carefully selected, strong, well-trained man to be a locomotive fireman. He is indispensable. The railroads can't function without him.

Why Not Electrification?

One time the men who painted stripes on the flivvers in Henry Ford's factory went on strike. Nary a stroke of work would they do, they said, until Henry came across with a raise.

The striking stripe painters interested Mr. Ford for a few moments only.

"Why red stripes on Ford cars?" he asked.

This was some years ago and ever since Ford cars have sold just as well without stripes as with them.

Why locomotive firemen?

Why not electrified railroads?

The New York Subway and elevated railroads operate more trains and carry more passengers than all the other railroads of this country combined, and there isn't a single locomotive fireman employed on the whole system.

Electrified Roads

The New York, New Haven & Hartford Railroad is electrified from New York to New Haven. The trains seem to float along without effort. No chug, chug. No smoke, no cinders, no soot, no dirty grimy coal. It is but a short haul as distances go in this country. More passengers and more freight offers for the longer haul to Boston. If this railroad would continue their electrification to Boston they would get practically all of the Boston and New York business instead of dividing it up as they now do with motor cars and coastwise boats. Anybody that can travel on an electric train isn't going to take a long motor ride or steamboat ride because the electric train is faster, cleaner, more desirable in every way. It might be possible to reduce the passenger and freight rates because of the greater efficiency of electricity, greater fluidity to traffic, greater speed. It would greatly lessen the labor cost because an electric loco-

motive dispenses with coal and that means not only the elimination of the fireman but also the coal heavers, the extra shovel men, the coal yards, the hundreds of cars required to keep the locomotives supplied with coal.

The Boston & Maine Railroad has one stretch of track electrified, that through the Hoosac Tunnel. If this road would electrify from Boston to Hoosac Tunnel they would effect handsome savings on both labor and fuel. More freight moves over the Boston & Maine Fitchburg division than almost any other railroad in the world. In good times it is one well nigh endless procession of long freight trains, and these trains are hauled by two and many times three enormous locomotives required to lift the heavy loads over the grades. Three locomotives eating up coal in ruinous waste, three engineers, three firemen, to move



TODAY

"Steaming-up" in the yards, a typical example of the waste, or fuel inefficiency, which Joseph Preston condemns in the accompanying article

a train that one electric locomotive could haul with one man to operate it.

A Few Figures

With a modern steam electric generating plant power can be produced that will enable an electric locomotive to move 1,600 tons of freight one mile with the use of 100 pounds of coal. To move 1,000 tons of freight one mile a steam locomotive uses 290 pounds of coal. One electric locomotive is equal in hauling capacity to three of the most modern of steam locomotives. In addition to the saving on coal there is the fireman, the small army of engine hostlers, wipers, roundhouse men, to care for the locomotive. There are the water tanks, the coal yards, the turn tables, the cinder pits, the machine shop which must be maintained to nurse the cranky loco-

motive along. Locomotives wear out amazingly fast, much faster than an automobile. Run a locomotive 75,000 miles and it must go to the shops for a thorough making over and renovation. Thousands of automobiles have run 75,000 miles and are still in very good condition—at least the advertisements of the manufacturers say they are. An electric locomotive because of the small number of parts to its mechanism will run for half a million miles with only occasional repairs.

Since prohibition went into effect in this country the only successful manner in which Bostonians can quench a severe thirst is to take a trip to Montreal. The Montreal and Boston express trains are now liberally patronized. But the railroad fare from Boston to Montreal and return amounts to as much as the ordinary man can earn in a week. If the Boston & Maine would electrify its lines from Boston to Montreal they might be able to reduce the fare, run speedier, cleaner, more desirable trains and they would get more business. Under present conditions in making the run from Boston to Montreal it is necessary to change the locomotive four times, at Nashua, Concord and Woodsville, N. H., and Newport, Vt. Not only does the locomotive change four times but the train crews change four times. Were the line electrified these division points, which are old time, handed down traditions, would disappear. An electric locomotive could haul the trains the entire distance, at far greater speed, at far less expense and with decidedly greater comfort to the passengers.

A Good Investment

The best investment the New York Central Railroad ever made was in the short stretch of electrified road leading into the Grand Central Terminal in New York City. It made Park avenue over from a depressing avenue of dilapidated piano factories and lonesome boarding houses into one of the most desirable, one of the handsomest, the most fashionable avenues of any (Continued on page 726)



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Missouri ranks ninth in population and eighteenth in area in the States of the Union. These bonds are legal for savings banks and trust funds in New York, Massachusetts, Connecticut and other states.

The last financial statement of the State as officially reported is as follows: Assessed valuation 1921, \$4,920,926,179—Certificates of indebtedness \$4,398,839; total bonded debt including this issue \$16,200,000.

These bonds are entitled to the highest rating in our opinion and make an attractive tax exempt security at the price offered.

WHY ELECTRIFICATION OF RAILROADS WOULD INCREASE PROFITS

(Continued from page 679.)

city in the world. It increased the road's equity in New York real estate by many millions of dollars. For almost thirty years Niagara Falls has been producing electricity in volume sufficient to electrify the New York Central system from pillar to post, but true to the old time tradition the road sticks to the costly locomotive.

The Pennsylvania Railroad is also electrified for a few miles, just enough to get it into New York under the Hudson River and its Long Island lines. This road too owns valuable New York real estate which has been vastly enhanced in value by the building of its magnificent terminal. If it would sell some of its New York real estate and put the proceeds into electrification of its lines to Philadelphia it would be doing its patrons a real service and would be able to save large sums that now go for labor and fuel. It is labor and fuel that cost the railroads 75% of their operating expenses.

The world's greatest, the world's most progressive railroad, the one road that is making history among American railroads, is the Chicago, Milwaukee & St. Paul, which has 649 miles of its main line electrified. On this stretch of road, which is but a fraction of the road's mileage, forty-five electric locomotives have replaced 120 steam locomotives and they are doing the work a great deal better and more economically than the steam locomotives did it.

The juice for this electrified section is supplied by hydroelectric power plants. Electric operations saves 259,000 tons of coal per annum and 31,700,000 gallons of fuel oil, for some of

its locomotives were oil burners previous to electric installation. If this road would continue the electrification for the full distance from Chicago to the Pacific Coast it is a good guess that freight rates would come down to a point where boat shipments would cease. The chance traveler to the Pacific Coast would inevitably specify the St. Paul road.

One Million Volts

The prize awarded for the greatest advancement in electricity for 1921 was for the recently perfected million volt transmission line. A million volts of electricity can now be sent over a copper wire one thousand miles, and because of its high voltage the juice follows the wire and does not ooze off into space as it shows a disposition to do on lower voltages. There is said to be 50,000,000 horsepower in the rivers of this country which can be developed by hydroelectric power plants, enough to operate all our railroads and with many, many millions of horsepower to spare. The New York Central lines, the New York, New Haven & Hartford and the Boston & Maine lines can get all the juice they want from Niagara Falls and the St. Lawrence River to operate every last mile of their systems, and this electricity will come from inexhaustible sources, from water power which never fails.

But the process of evolution is slow. Changes do not come over night. Today many able railroad managers are quick to say that general electrification of our railroads is impracticable, but all are ready to admit that the day is coming when all railroads will be electrified. The railroad presidents, the engineers and firemen, know that electrification is coming some day, somehow. It may be that there are members of the Big Four Brotherhoods who will fight electrification because they believe it will throw some of their members out of a job. But the more intelligent of their organizations cannot fail to see that greater speed, greater economy, greater capacity, greatly lessened cost of operation is going to bring the railroads greater business, and greater business means jobs for every one.

The New Book Letter

WHAT JAPAN WANTS—By Yoshi S. Kuno.

A book like this, coming at a time when Japanese diplomatic relations with the United States are occupying men's minds, is certainly timely. The book aims to set forth plainly, and without bias, what Japan wants both at home and abroad. The need of an outlet for the excessive population is pressing, and to this problem, Dr. Kuno, a native Japanese, who is connected with the University of California, offers his solution. With the 1920 census telling us that there are now 111,000 Japanese in this country, 72,000 in California alone, and that this is an increase of 50% over the figures of 1910 we cannot afford to let any opportunity of gaining information on this subject pass unnoticed. Price \$1.10.

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