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## INTRODUCTION.

### INFLUENCE OF RAILROADS UPON AGRICULTURE.

The first impression made on the popular mind by any great improvement in machinery or locomotion, after the admission of their beneficial effect, is that they will, in some way or other, diminish the demand for labor or for other machinery. Hence it was that in Europe the introduction of printing was denounced on account of its supposed tendency to diminish the employment of writers or copyists, and the associations of individuals against its employment, similar to the opposition subsequently manifested to the use of labor-saving machinery in manufactures. It was long before this prejudice could be overthrown, but the subject is now much better understood. It is now established, as a general principle, that machines facilitating labor increase the amount of labor required. This is done chiefly by cheapening the products of labor so that more can be consumed, and ultimately more labor employed. The introduction of cotton and wool machinery was followed by outbreaks of workmen against machinery; yet nothing is more certain than that hundreds of thousands of men and women are employed in the manufacture of cotton who would not have been if machinery had not cheapened cotton cloth so that it could be introduced into general use. So it might be assumed that the introduction of sewing-machines would at once throw many sewing women out of employment; but such is not the fact. Many more sewing women are now employed than there were before the sewing-machine was introduced. In the same way the influence of railroads was at first very much misconceived; even among civil engineers the vast power of steam and of cohesion on the tracks were not understood. On the completion of the Liverpool and Manchester railway, some of the ablest engineers laid it down as a settled principle that railroads would not be able to carry heavy freights, and their business must be confined to the carriage of passengers. It was also considered impracticable to ascend over fifty feet per mile with ordinary locomotives; as a consequence of this theory *inclined planes* were for several years made wherever the grade was over fifty feet. If this practice had continued, it must obviously have proved a great obstruction to the carriage of heavy freight. Time and inventive genius have happily overcome all these difficulties; but still, in this, as in other cases, there was an idea that the transportation of agricultural products would result in diminishing the number of horses, wagoes, and steamboats. Indeed, this would seem a natural, if not a necessary, effect of transporting immense quantities of agricultural produce by a machinery which did not before exist. The result, however, proves precisely the contrary. Horses have multiplied more rapidly since the introduction of locomotives than they did before; and even steamboats, on such rivers as the Ohio and the Mississippi, where the recently constructed railroads have been in direct competition with them, have continued to increase almost without interruption. Before we look at the general results of railroads on the agricultural interests, we will glance at their incidental connexion with the other means of transportation. Take, for example, the increase of horses in connexion with the increase of railroads.

The following is the number and increase of horses in the last twenty years, including mules and asses:

	No. of horses.	Increase.
In 1840.....	4,335,669	
In 1850.....	*4,896,050	12 per cent.
In 1860.....	*7,400,322	51 per cent.

Three-fourths of all the miles of railroad have been made since 1850; and we see that since then the increase of horses has been the greatest. If we pursue this inquiry a little further, we shall find that horses have increased the most in those States in which the greatest extent of railroads has been made since 1850. Take, for example, the number of horses employed in agriculture and for other purposes in the five great States of the west:

\* Exclusive of 1,185,514 not employed in agriculture.

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*Number of horses employed in agriculture and for other purposes in the five great States of the west:*

States.	1850.	1860.	Increase, per cent.
Ohio.....	406,820	753,681	61
Indiana.....	320,898	502,069	54
Illinois.....	278,626	724,138	160
Michigan.....	58,576	167,939	186
Wisconsin.....	30,335	145,584	380
Aggregate.....	1,155,255	2,283,671	106

In these five States there have been constructed since 1850 nearly nine thousand miles of railroad; and yet there we find this extraordinary increase in the number of horses. We do not present this as evidence that the construction of railroads necessarily augments the demand therefor, and therefore increases the number of horses, although we have no doubt that such is the case; but simply to show that railroads have not diminished one of the great elements in competing means of transportation. It must be recollected that only forty years ago the only means of transporting goods and products between the eastern and western States was by wagons, and that the business of transportation in this way was as much a business, on relatively as large a scale, as that of transportation by canal and railway is now. The first great change in this mode of transportation was by the New York and Pennsylvania canal; but the whole business of the canals in the first years of their introduction was small in comparison with that of the railroads now. Hence it seemed that railroads must diminish the number and importance of horses, but such was not the fact; and we shall see in this, as in the case of all animals, that railroads tend to increase their number and value. This is now an established principle, which we shall illustrate in regard to other domestic animals.

Although but slightly connected with the interests of agriculture, we may here state another fact, that since the introduction of railroads, the building and employment of steamboats on our interior rivers have also increased largely, so that, even where railroads have competed directly with them, the steamboat interest has continued to increase in value and importance. This has not been always, we admit, in direct proportion to the growth of the country, but enough to show that, even where competition was greatest, this interest has not been injuriously affected. More than double the number of steamers were built on the waters of the interior west in 1861 than were in 1850.

We advance these facts, not so much to show the direct and positive influence of railroads on agriculture, as to show that there is no interest of agriculture and commerce that railroads have injured, even, when upon the most plausible theories, such results were anticipated.

We now proceed to show the positive advantages which all departments of agriculture have derived from the construction of railroads. So great are their benefits that, if the entire cost of railroads between the Atlantic and western States had been levied on the farmers of the central west, their proprietors could have paid it and been immensely the gainers. This proposition will become evident if we look at the modes in which railroads have been beneficial, especially in the grain-growing States. These modes are, first, in doing what could not have been effected without them; second, in securing to the producer very nearly the prices of the Atlantic markets, which is greatly in advance of what could have been had on his farm; and, third, by thus enabling the producer to dispose of his products at the best prices at all times, and to increase rapidly both the settlement and the annual production of the interior States. A moment's reference to the statistics of internal commerce will illustrate these effects so that we can see the vast results which railroads have produced on the wealth and production of the country.

1. If we examine the routes and tonnage of the trade between the Atlantic cities and the central western States, we shall find some general results which will prove the utter incapacity of all other modes of conveyance to carry on that trade without the aid of railroads. Between Lake Erie on one

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side and the Potomac on the other, the commerce between the east and west is altogether carried on by way of several great arteries, which are these, viz: the Erie canal, the Oswego canal, the Champlain canal, the Central railroad, the Erie railroad, the Pennsylvania railroad, and the Baltimore and Ohio railroad. There are no other great channels of conveyance between the east and the west, and in fact no other routes appear practicable. However large an amount of product or merchandise may be carried by the lakes, it must be shipped to or from Buffalo, Oswego, or Ogdensburg. However multiplied may be the routes by rail or canal, by which products may arrive at Buffalo, Pittsburg, Wheeling, or Parkersburg, all the freights carried over them going east must pass over these great routes. We have, therefore, the means of determining accurately the relative transportation by different routes and modes. The different modes are all reduced to two—canals and railroads. The proportion of tonnage on these several lines of conveyance, as reported in 1862, was as follows:

CANALS.	
	Tons.
Erie canal.....	2,500,762
Oswego canal.....	862,920
Champlain canal.....	650,000
Aggregate.....	<u>4,003,682</u>

But, we must observe that the Oswego canal joins to the Erie canal, and its tonnage, arriving at or leaving Albany, is included in that of the Erie canal. In fact, the tonnage of the canals, which is counted at Albany, is only that of the Erie and the Champlain, and of the latter but a small portion goes to or from the west. We have at the utmost, then, the carriage on canals between the Atlantic cities and the west of 3,150,000 tons.

RAILROADS.	
	Tons in 1862.
Pennsylvania railroad.....	1,792,064
Erie railroad.....	1,632,955
New York Central railroad.....	1,387,433
Baltimore and Ohio (estimated).....	1,200,000
Aggregate tonnage of these lines.....	<u>6,018,452</u>

We observe that in 1862 the tonnage of the six great arterial lines of transportation between the east and west amounted to over nine millions of tons, of which only one-third were carried by water. We must recollect that this was the case when the Erie canal of New York had been enlarged and refitted with the express purpose of transporting the products of the west, and was supplied with five thousand canal-boats. It is evident, therefore, that railroads not only carry two-thirds of the freights to and from the west at the present time, but that such is the rapid increase of western products, and the surplus carried to Atlantic or foreign markets, that the time is near when all that can be carried by water will be but a small proportion of the whole. The transportation by wagons is no longer possible to carry the surplus products of the interior States to either foreign or domestic markets. In fine, in the absence of railways the cultivation of grain beyond the immediate wants of the people must cease, or the surplus perish in the fields. Such was exactly the state of things in the west before the general introduction of railroads. The great grain-fields of Ohio, Indiana, Illinois, and beyond the Mississippi, have been mainly cultivated because railroads made their products marketable and profitable. In one word, railroads did what could not have been done without them.

2. Railroads secured to the producer very nearly the prices of the Atlantic markets, which was greatly in advance of any price which could possibly be obtained in western markets. It might be supposed that if the carriage of a bushel of grain from Sandusky to New York was reduced from forty cents a bushel to twenty cents, the gain of twenty cents would inure, in part at least, to the consumer; but experience shows this is not the fact. This gain of twenty cents inures to the producer. In proof

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of this it will be sufficient to adduce two or three well-known facts. The prices of flour and meat at New York (estimating them at the gold standard) have not been reduced in the least, notwithstanding the immense quantities of the products of grain imported into that city. On the other hand, the prices at Cincinnati, on the Ohio, have doubled, and in some articles, such as pork, have trebled. The great bulk of the gain caused by the cheapness of transportation has gone to the producer. This depends on a general principle, which must continue to operate for many years. The older a country is, the more civic and the less rural it becomes; that is, the greater will be the demand for food, and the less the production. The competition of the consumer for food is greater than that of the producer for price. Hence it is that Europe, an old country, filled with cities, makes a continual demand on this country for food. Hence it is that New England and New York, continually filling up with manufacturers, artisans, and cities, must be supplied with increased quantities of food from the interior west; and hence, while this is the case, prices cannot fall in the great markets. Hence it is that the cheapening of transportation inures to the benefit of the agricultural producer. New England consumes more than a million barrels of western flour. The transportation is cheapened a dollar per barrel; and thus, in New England alone, in the single item of flour, a million of dollars, net profit, is put into the pockets of the western farmer by the competition of railroads; for a large portion of this flour is carried over the Massachusetts Western railroad. It is entirely true that the manufacturer of New England shares, on his side, in the gain of cheap transportation; but we are here considering simply the influence of railroads on agriculture.

In the western markets the gain to the farmer is palpable in the enhanced prices of every article. At Cincinnati, in 1848 and 1849, (which was the beginning of the greatest railroad enterprises,) the average price of hogs was \$3 per hundred. In 1860 and 1861 it was double that, and has continued to increase. This was a net gain to the farmers of Ohio alone of from three to four millions of dollars. In the entire west it was a profit of more than twenty millions on this single animal; for, if there were now no railroads, this product could not be carried to market except on foot, which would take away half the value. No further illustration of this point need be made. Take the market prices of New York and Boston, on the Atlantic, and of St. Louis and Cincinnati, in the west, at an interval of twenty years, and it will be seen that the cheap prices of the west have gradually approximated to the high prices of the east, and this solely in consequence of cheapening the cost of transportation, which inures to the benefit of the farmer.

3. By thus giving the farmer the benefit of the best markets and the highest prices, railroads have increased the agricultural productions of the interior States beyond anything heretofore known in the world. We have already shown that this increased production, or rather its surplus, could not have been carried to market without the aid of railroads, more than two-thirds of the whole being carried off by that means. Let us now reverse this operation, and we find, on the other hand, that railroads have stimulated and increased production. The northwestern States are those in which the influence of railroads on agriculture is most obvious. In the five States of Ohio, Indiana, Illinois, Michigan, and Wisconsin there were comparatively few miles of railroad prior to 1850; but from 1850 to 1860 the construction of roads was most rapid. In 1850 there were only 1,275 miles of railroad in those States, but in 1860 there were 9,616 miles. Let us now examine the products of those States in 1850 and 1860, and see how the progress of railroads has sustained and stimulated agricultural production. The following table shows the increase of the principal vegetable and animal production in the five States of Ohio, Indiana, Illinois, Michigan, and Wisconsin in the ten years from 1850 to 1860:

	In 1850.	In 1860.	Increase per cent.
Wheat.....	39,348,495 bushels.	79,798,163 bushels.	100
Corn.....	177,320,441 "	280,268,862 "	58
Oats.....	32,660,251 "	51,043,334 "	50
Potatoes.....	13,417,896 "	27,181,692 "	100
Cattle.....	3,438,000 "	5,371,000 "	59

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This increase is decidedly beyond that of the population; showing that the products of agriculture are, in those States, profitable. The aggregate of grain products in those States was:

In 1850 .....	*255, 240, 444 bushels.
In 1860.....	*422, 369, 719 "

What part railroads have had in carrying this product to market we shall see by† ascertaining the surplus, and the manner in which it was transported. The commissioner of statistics for the State of Ohio, in his report to the legislature of Ohio, estimates (in the actual carriage of railroads and canals) that *three-fifths* of the value of agricultural products of Ohio are exported, excepting, of course, pasturage, fruits, garden products, &c. In 1859-'60, twelve millions of bushels of wheat were exported from that State, and an equal proportion of corn, reduced into other forms, such as fat cattle, hogs, pork, lard, whiskey, cheese, &c. Three-fifths of the aggregate grain production of these five States (1860) will give two hundred and fifty millions of bushels of grain. This is vastly greater than the whole tonnage of canals and railroads, and would, therefore, seem incorrect. This, however, is not so. The heaviest article (corn) is reduced to a fourth, perhaps, less weight by being changed into whiskey, pork, and cattle. The same is true of oats, and thus the ten millions of tons represented by the canals and railroads may cover all the surplus which finds the extreme eastern markets. A large quantity of the surplus products of these States is consumed in way-markets. We see now, that, since railroads carry two-thirds of this immense export, they represent nearly or quite the same proportion of the capacity of those States to raise any surplus, and therefore two-thirds of the profit made upon it. If we now consider the question of the profits of agriculture, the case becomes still stronger. The actual cash value of the products carried to market from these five States (that is, the surplus) is two hundred millions of dollars, and it is safe to say that one-half this sum is due to the influence of railroads. There are some interesting facts on this subject, to some of which we will briefly allude. Take, for example, the prices of both products and lands in the interior States, and compare them at different periods.× Forty years ago (1824-'25) the surplus products of Ohio had already accumulated beyond the means of transportation. In consequence of this fact, wheat was sold in the interior counties, for 37 cents per bushel, and corn at 10 cents. After the New York canal (Erie) was finished, in 1825, and the Ohio canals several years later, these prices were raised more than fifty per cent.; but when two or three of the main railroad lines were finished in 1852-'53, the rise in prices and the amount carried forward to the eastern markets were even more increased. To show, in some measure, the effect of the improved means of transportation on the value of produce in the interior, we make the following table of prices at Cincinnati at several periods:

	In 1825.†	In 1835.	In 1853.	In 1860.
Flour.....	\$3 00 per barrel.	\$6 00	\$5 50	\$5 60
Corn.....	0 12 per bushel.	0 32	0 37	0 48
Hogs.....	2 00 per ewt.	3 12	4 00	6 20
Lard.....	0 05 per pound.	0 08	0 08½	0 11

We find that in 1860 the price of flour was nearly double that of 1826; the price of corn nearly four times as much; the price of hogs three times as much, and the price of lard double. From 1835 to 1860, (when the railroads were completed,) under the influence of railroad competition with canals the price of corn advanced 50 per cent., and that of hogs 100 per cent. Perhaps no articles can be selected which furnish a more complete test of the value and profits of farming in the States of the northwest than that of these staples, corn and hogs.

But there is another respect in which the influence of railroads is almost as favorable to agriculture as that of cheapening the transportation of produce. It is that of cheapening the transportation, and therefore reducing the prices of foreign articles and eastern manufactures consumed by the farmers of the interior. We need not adduce tables to illustrate this; for it is quite obvious and well known

× Includes wheat, rye, corn, oats, barley, and buckwheat.

† Edward D. Mansfield.

‡ The prices of 1826 are from "Drake & Mansfield's Cincinnati, 1826."

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that this has been the effect, though perhaps not to so great an extent as the reverse, in the case of produce. In 1839-'40 sugar was just the same price as in 1857 and 1858; but the average price of coffee from 1833 to 1838 was three cents higher than it was from 1853 to 1860. On the whole, the prices of articles carried from the east to the west were diminished, while those from the west to the east were increased. Again, the influence of railroads on the value of farming lands is too great and striking not to have been noticed by all intelligent persons. We have, however, some remarkable instances of the specific effect of certain railroads; we have, for example, the immediate effect produced on the lands of Illinois by the Illinois Central railroad. That company received from the government a large body of land at a time when the government could not sell it at a dollar and a quarter (\$1 25) per acre. Since then the company has constructed its road and sold a large part of those lands at an average of \$11 per acre, and the greater part of the lands of Illinois is fully worth that. Notwithstanding the rapid growth of population, the larger part of this advance is due to railroads. The following table shows the advance (by the census tables) of the cash value of farms in the five States mentioned in the ten years from 1850 to 1860:

	1850.	1860.
Ohio.....	\$358,758,602	\$666,564,171
Illinois.....	96,133,290	432,531,072
Indiana.....	136,385,173	344,902,776
Michigan.....	51,872,446	163,279,087
Wisconsin.....	28,528,563	131,117,082
Aggregate.....	<u>671,678,075</u>	<u>1,738,394,188</u>
Increase in ten (10) years.....		<u>\$1,066,716,113</u>

It is not too much to say that one-half this increase has been caused by railroads, for we experience already the impossibility of conveying off the surplus products of the interior with our railroads. Putting the increase of value due to railroads at a little more than one-third, we have four hundred millions of dollars added to the cash value of farms in these five States by the construction of railroads. This fact will be manifest if it is considered that the best lands of Illinois were worth but a dollar and a quarter per acre prior to the construction of railroads, and are now worth twenty dollars.

We need not pursue this subject further. If the effect on the central western States has been so great, it is still greater in the new States which lie beyond the Mississippi. They are still further from market, and will be enriched in a greater ratio by the facilities of transportation. Indeed, railroads are the only means by which the distant parts of this country could have been commercially united, and thus the railroad has become a mighty means of WEALTH, UNITY, and STABILITY.

### PRESERVATION OF FOREST TREES.

We have endeavored to avail ourselves of all proper occasions, to impress upon our generation the importance of exercising greater care in the preservation of forest trees. It is lamentable, in view of present ruthlessness, and the demands of posterity, to observe the utter disregard manifested by the American people, not merely for the preservation of extensive groves, but the indifference which they exhibit for valuable trees, the destruction of which is not necessary to good cultivation, and the existence whereof would not only add greatly to the value of their property, but contribute vastly to health, the fertility of their farms, and the comfort of their live stock. We have seen thousands of farms rendered less productive and of much less intrinsic value by the destruction of timber, especially on their north and west boundaries, where they protect from the colds of winter, and others made unhealthy by removing the barriers which nature had placed to the encroachments of miasm.

We remember, upon an occasion of remonstrance with a farmer against destroying a beautiful isolated tree in a large field, his foolish reply in extenuation of his labor, that it supplied a resort for the blackbirds which destroyed his corn, nor could he be persuaded that its use by the birds which