

THE AGE OF STEAM.



BY most people of a fair degree of intelligence it is understood, in a general way, that the wonderful progress the world has made within the past few years, its increase in population, the development of new countries and the ever increasing abundance of "things," are due to the employment of the powers of nature in relieving mankind from physical toil; but few of the most intelligent appreciate the extent to which this is true. Not long ago Mr. Gladstone said that England had amassed more wealth in this century than in all the previous eighteen hundred years of the Christian era. Our own government has been founded and our wealth developed in the same period. The brilliant Aryan race, the progressive race of mankind, which has developed the civilizations of India and of Persia, of Greece and Rome, of Germany and France, of England and the United States, within this period has increased from one hundred and twenty millions to four hundred millions.

From the remote past this race has been toiling and striving, waging a ceaseless war against nature and circumstances, but until the invention of means to utilize the power of steam century after century passed with little difference in its numbers; but as soon as we come within the magic influence of steam, suddenly, as Hittell says, "The Aryan race, acquiring the power to draw crops from the soil, to distribute them more evenly, thus preventing disease and famine, and also to visit new and more profitable fields of industry, multiplies so as to keep pace with the increased supply of food and with the demand for labor."

If we attempt to recount the achievements of this increasing population, we must use figures so vast that they make but little impression upon the mind. It is only by comparison of our abundance with the lack of our near ancestors that their magnitude can be appreciated. During the closing years of the last century, Burke, Pitt, and Sheridan were borne through the streets of London by chair-men, and in Paris stalwart men were making a livelihood by carrying ladies upon their backs across the mud of the streets. Not a hundred years have elapsed since the owners of riding horses petitioned the English parliament to forbid the establishment of a stage coach line, which had lately been started and was ruining their business. At the beginning of the present century, in our own country, all cloth was manufactured upon the household spinning wheel and loom, and the wages of women in spinning, weaving and doing the work of the household, were fifty cents a week, or twenty-five dollars per annum, besides board. The hour was guessed by the height of the sun above the horizon, ex-

cept by some of the well-to-do who could afford to pay fifty dollars, the price of an ox, for a clock. It was not till 1767, just before the American revolution, that the second saw mill was erected in Great Britain, and this, like the first one, was demolished by a mob of sawyers, who said that it was taking the bread out of their mouths. At that date, however, there were many mills in this country manufacturing lumber for the home demand, or for export to Cuba and England. It is within the memory of some readers of THE WEST SHORE, when, in this country, the worn or bent pewter spoons were recast in the family spoon mould, when the boot maker went from house to house with his kit of tools to make new shoes or cobble old ones, and the tailoress, with goose and press-board, was another welcome itinerant. Within a hundred years farmers have thrown away the wooden plow. The iron mould-board was first perfected, if not invented, in the United States, by which the working capacity of the plowman, and the productive capacity of the soil were each perhaps more than doubled. Since the adoption of the iron plow, France, with a smaller number of men engaged in the business, produces three times as much wheat at an average harvest. Two centuries ago, England, with an estimated population of five and a half millions, produced less than half a million bushels of wheat, which would give but one and a half pints of flour to each individual per annum. Even as late as 1850, the estimated amount of tonnage transported throughout this country was four hundred pounds for each individual. Now it is more than ten times that amount. The six New England States pay the West more than sixty million dollars annually for wheat and corn. They pay, of course, in manufactured goods; they could pay in nothing else. This gives us some idea of the vast consequence of transportation to our present welfare and future growth.

Without railroads, the New England states would be reduced to starvation in less than a month, for New Hampshire produces only bread enough to last her population about twenty-eight days, while Massachusetts produces but one day's supply, and Rhode Island does not raise enough for breakfast. On the other hand, the West, without railroads, would be thrown back to the limitations of 1840, without being in a condition to endure them as well as at that time. A bushel of corn, worth in the market seventy-five cents, will bear transportation by horses only one hundred and twenty-five miles, and a bushel of wheat worth one dollar and fifty cents will eat itself up, as the farmers say, if hauled more than two hundred and fifty miles. This is at the rate of twenty cents per ton per mile. The great trunk railroads, however, transport breadstuffs from the Mississippi valley to the Atlantic cities for a half a cent a ton per mile. The locomotive engines in the United States have a capacity equal to the work of more than twelve times the whole number of horses. The steam engines in use throughout the world furnish a power estimated to be equal to that of more than three hundred million workmen, and the saving of labor by other machines is