probably even greater. In other words, there is now accomplished by machinery alone, in supplying the wants of mankind, what would be equivalent to the work of more than half the entire population of the globe, if every human being were a working man.

The relief from physical toil, through the employment of the powers of nature, has enabled the race to make a corresponding intellectual development. Fifty years ago the Bible, the almanac and the text books used in schools, comprised the literature of the great majority of households. In the advanced education of the academies there was only an explanation of the first rudiments of natural philosophy. Chemistry had not attained to the dignity of a distinct science. Organic chemistry, which in these days is making such vast contributions to civilization, was wholly unknown. In the electrical science our knowledge was almost as limited. Certain phenomena of the electrical machine were known, but the almost infinite energy of electricity and magnetism was of no service to mankind. In the familiar rhyme of thirty years ago,

> Benjamin Franklin caught the horse,
> 'Twas harnessed by Professor Morse.

Until these forces were harnessed and made to do the work of man they were dreaded elements, with which it was popularly deemed a sacrilege to meddle.

The first use of this energy of nature to diffuse information was on Nov. 28, 1814, when the London *Times* was printed on a press driven by steam, making eleven hundred impressions an hour. But for twenty years later than that the printing presses of this country were worked by hand. Now we have perfecting presses that print twenty-five thousand impressions an hour. The two Bible societies, British and American, are together printing a copy of the entire Bible every ten seconds. In 1870, the number of newspapers printed in Great Britain was three hundred and seventy millions. About the same number were printed in France, and more than four times as many were printed in the United States. To-day the number of copies of newspapers printed in this country exceeds two thousand millions.

The commerce of the world is now regulated by telegraph, which, at the same time, vastly augments the power of capital. A telegram from Portland to a New York bank, or from New York to a London bank, answers all the purposes of gold, silver or bills of exchange. While the Oregon pioneer who spent half a year in coming to this state, may now be carried back by steam in four days, the train in which he is borne is guarded from other trains thundering towards him or following him upon the same track, by the train dispatcher, who sits in a telegraph office a hundred miles away. The telegraph wires along the track are the reins by which the iron horse is driven. It is needless to multiply illustrations of the various ways in which the energy of nature is employed to relieve mankind from physical toil and thus augment the capacity for work and ability to supply ever increasing wants.

The attainments which have been so rapidly made in this age of steam constitute our present civilization. As it has arisen so largely out of the conversion to the use of man of the powers of nature, it would be strange if it did not partake largely of the character of its material sources. The impulse imparted by the invention of steam has been attended by much general improvement, and it is doubtless, as John Stewart Mill has nobly said, "leading up to a recognition of the generous doctrine of the solidarity, the fellowship, the common brotherhood of man." And yet there are many reasons for accepting the truth of Mr. Alfred Wallace's statement that "our mastery over the forces of nature has led to a rapid growth of population and a vast accumulation of wealth; but these have brought with them such an amount of poverty and crime, and have fostered the growth of so much sordid feeling and so many fierce passions, that it may well be questioned whether the mental and moral status of our population has not, on the average, been lowered, and whether the evil has not overbalanced the good. * * * And if we continue to devote our chief energies to the utilizing of our knowledge of the laws of nature, with the view of still further extending our commerce and our wealth, the evils which necessarily accompany these, when too largely pursued, may increase to such gigantic dimensions as to be beyond our power to alleviate. Our vast manufacturing system, our gigantic commerce, our crowded towns and cities, support and constantly renew a mass of human misery absolutely greater than ever existed before. They create and maintain in lifelong labor an ever increasing army whose lot in life is the more hard to bear by contrasts with the pleasures, the comforts and the luxury which they see everywhere around them, but which they can never hope to enjoy, and who, in this respect, are worse off than the savage in the midst of his tribe. Until there is a more general recognition of this failure of our civilization, resulting mainly from our neglect to train and develop more thoroughly the sympathetic feelings and the moral faculties of our nature, and to allow them a larger share in our legislation, our commerce and our whole social organization, we shall never, as regards the whole community, attain to any real or important superiority over the better class of savages." With a similar view, but more cynical tone, Mr. Lecky says, "The time will doubtless come when the man who lays the foundation stone of a manufactory will be able to predict with assurance in what proportion the drunkenness and unchastity of his city will be increased by his enterprise. Yet he will still pursue that enterprise, and mankind will still pronounce it to be good."

A tragic incident occurred in New York a few years ago which illustrates the selfish immorality which the public takes for granted as one of the constituents of our civilization. A yacht was wrecked off Staten Island, and a young, generous and wealthy merchant perished while endeavoring to rescue his wife. For some time afterward the neighborhood was pervaded by a sentiment