


1898

The Effect of Inventions Upon Social Problems

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Recommended Citation

Congdon, Henry A., "The Effect of Inventions Upon Social Problems" (1898). *Student and Lippitt Prize essays*. Paper 56.
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THE EFFECT OF INVENTION UPON SOCIAL PROBLEMS.

In the progress of industrial history certain periods are characterized by great inventions, which wholly change the conditions of the various branches of industry. The minor inventions of the same time, though perhaps seemingly distinct from one another, are of a subsidiary character, following as the natural result of the various applications and modifications of the primary form of these great inventions. Although for a while invention may follow invention with surprising rapidity, we still trace the same order, and we can also see corresponding changes in society. Aside from a classification according to their form, nearly all inventions fall naturally under one or another of three great classes, those which affect manufacturing industries; those which affect transportation; and those which affect the cultivation of the soil.

If we could make no regular classification of inventions, then we should have to content ourselves with a study of the most important ones, and their direct effect upon society. The effects of some of these are very striking,- of the earlier ones, we note the spinning jenny of Arkwright, which began a revolution of the cotton industry;

the printing press; the steam engine; and later- and perhaps most impressive of all of them in its effects- the cotton gin, which greatly increased the demand for slave labor, and had its share in precipitating one of the most disastrous wars known to modern history.

But since there is an order in the form of inventions, as well as a classification according to their use, let us leave history to deal with the individual invention and pass on to see what effects, as a whole, they have upon society. While many admit that a certain class of people derive great benefit from the products of invention they claim, nevertheless, that the laboring class is not benefited, that there is a persistence of poverty amid advancing wealth, and instead of one's toil being lightened the very struggle for existence becomes more burdensome. The cause of this is often ascribed to the displacement of labor by labor- saving machines. A century ago anyone might have been justified in considering this a cause for the persistence of poverty among the laborers, since the earlier type of machines, like the spinning jenny, acted directly to displace the laborer. But such is not the condition at the present time as we shall readily see if we pause to consider our most important industries. Our vast system of railways for example, with the many advantages which they bring,

employs one out of every twenty-eight of our working men. Surely in this instance the number displaced sinks into insignificance when it is compared with the number of those employed. In telegraphy thousands have been employed and benefited while no one has been displaced. This is also true of the electro-plating industry and in fact, to a large extent, of the whole field of electricity. Indeed this principle holds true in so many industries, that by a scientific examination of the number of created occupations it can be seen that the displacement of labor is more than offset by its expansion. But how else is the laborer benefited? The fact remains almost undisputed that the length of his day's labor is shortened; not only is the actual number of hours which he works lessened, but there is often a gain of one half to more than one hour, in going to and from his labor by the present system of rapid transportation.

We have seen that invention helps the laborer to find employment and at the same time shortens his day's toil; still he does not seem to have his full share of the products of industry. Since wealth is steadily increasing, and actual wages do not rise in a corresponding ratio, there must be some fault in the distribution of wealth. Let us consider the claimants of production and the share of each.

In the English and American system of industry, these are, the landlord, the capitalist, the entrepreneur- or manager of industry-, and the laborer. Of these the capitalist, although wealth may increase, does not receive more in proportion to the capital invested, for his remuneration is measured by the rate of interest which does not increase. But how is it with the landlord? If his remuneration, that is, rent, always represented a corresponding amount of exertion or sacrifice on the part of the owner, there could be little question as to its equity. But such is not the case. As the population increases and the demand for land becomes greater, there is a large amount of wealth going to the landlord, for which he makes no exertion, neither risks nor economizes. This is known as the unearned increment of land. It seems hardly just that one individual should receive more of this wealth than another. It does seem just that it should be divided equally among the community. But how can this be done? Government confiscation of this unearned increment would be as inexpedient, as confiscation of lands would be impossible. If lands could be more evenly distributed we might find a remedy. But to do this by legislation appears impossible.

If land is to be more evenly divided, it must be done

by a change of conditions such that there will be no difference in the relative returns of the large and small tracts of land, in proportion to the invested capital. Could this condition be realized, we should see a natural tendency for lands to be subdivided. What will bring about that condition? Or first, what has produced the present condition? In agricultural communities there seems to be one factor which makes the large farm comparatively more profitable than a small one, and this is found in the form and cost of agricultural machinery. The improved machinery of the past has been so expensive that the owner of the small farm could not apply it with any profit. Its form also was best adapted to the large farm. But the close observer will notice that a change is taking place. The price of machinery is constantly decreasing, while its efficiency is constantly increasing. Now a man with a one-horse mower can perform as much work in a day as could formerly be done with a two-horse machine; and the man on the small farm, who could not afford the two-horse mower, buys the one-horse, which is fully as economical as the two-horse machine. This is equally true of other forms of machinery. Not only in the improvement of agricultural machinery does the owner of the small farm gain, but every discovery in agricultural chemistry can be as profitably applied to the small farm as to the large.

Upon the whole, we may say that the owner of the small farm is becoming more and more able to compete with the owner of the large one.

In other communities besides those which are agricultural, we see that the effect of our modern machinery often tends to distribute industry rather than to concentrate it, and in that direction which is most beneficial to the laborer. This is especially noticeable in the applications of electricity, through the use of which the small shop can be run more economically. The laborer living several miles from his work travelling upon the electric railway, can live cheaper than in a large city. In fact almost every application of electricity tends to distribute both industry and population. As this distribution becomes more complete, competition will become more perfect and we shall see as in the case of land, a more equal distribution of wealth.

There still remains the entrepreneur or manager of industry against whom the laborer makes a claim. He receives a large share of wealth called profits. These profits are often so enormous that the laborers have tried almost every conceivable method to reduce them. All attempts to do this other than those which tend toward forming a more perfect state of competition, have been a failure. This would naturally be so; for the remuneration which the entrepreneur re-

ceives in advance of that obtained by others employed in industry is owing to his superior knowledge and ability rather than to any change in population. If the competition between the employer and the laborer could become more perfect, then there would be a demand for employers of still greater ability, and industry would progress under more economic conditions. So the real question which we have before us is, How does invention affect this competition? With our rapidly increasing system of railways, movement from place to place is facilitated. This is a very important factor in perfect competition. Improvement of farm machinery would raise the actual wages of the farm laborer to a closer correspondence with those received in other industries. This would tend to induce a change of occupation, which would cause a rise in the wages of those employed under the entrepreneur system. In fact any change in industry which would allow a greater change of occupation would be most important in perfect competition. The outlook for the whole field of invention would seem to make competition more and more perfect. And perhaps this is its highest function, since rivalry among all classes of society is necessary for the highest ethical conditions.

Henry A. Congdon.