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HOW PATENTS AFFECT PRICES.

Give a dog a bad name—then hang him!

This is substantially the logic of no inconsiderable part of the world with regard to inventors' rights. A patent is called a tax upon the consumer, a tribute to greedy corporations, a burden upon the industry of the country; and the cry, "Away with patents!" follows as a matter of course.

A prominent speaker before the House Committee on Patents (Hon. S. A. Hurlbut) echoed, perhaps unconsciously, this estimate of the system, when he parodied Sydney Smith's description of the taxation of the English people from the cradle to the grave. "It is so in the United States in regard to patents," said the speaker. "I am told that there are patented apparatuses used sometimes during the birth process; but after the birth and until the death, there is not a step in the existence of that child, from the time that by patent pins his clothing is hooked together up to the time you carry him to his grave, an old man, in a patented coffin and in a patented hearse, that he can escape the operations of the Patent Office. They have gone so far now that his body is lowered into the ground by a patent crank, and even his grave stone is made by a patent process." Another speaker, the attorney of the Western Railroad Association, was even more severe in his protest against tribute-taking patents. Even so simple and necessary a thing as a loaf of bread, he said, "pays tribute to twenty-one classes of patents, in each of which classes many patents are now alive: the plowshare, point, handles, and tackle; the harrower, the seed sower, the cultivator, the harvester, the thrasher, and the separator; the bolts, the hopper, the stones, and the gearing of the mill; the bag, the holder of the bag, and the strap or string with which it is tied; the yeast or baking powder, the oven, the extension table, and the dishes, are each the subjects of patents to which tribute is paid."

The inference from all this is that the bread we eat costs more than it otherwise would by its share of each and all of these various tributes; that each step of our lives from the cradle to the grave is increased in difficulty and cost by the aggregate of all the burdens laid upon it by the infinite number of patents which hedge it about.

It is quite possible that the talk of the gentleman quoted was sheer buncombe; but the view indicated is seriously held by not a few honest people. For their sake let us examine the immediate effects of some of the patents complained of. Take those bearing upon the loaf of bread. The farmer's plow is patented. We may assume that a certainty; for if it were not patented he could not hope to compete with his neighbors who use patented plows. Space would fail here to trace the successive patented improvements in plows, by which the cost of plowing has been reduced. One of the latest, the substitution of chilled iron for cast steel in the mould-board, has doubled the durability of plows, and at the same time reduced their price from fifteen to twenty per cent. Within twenty years the improvement in lines of draught in plows, patented improvement, has reduced the cost of plowing at least one half. With over a hundred million acres of land under plow, the annual saving to the country effected by plow-patents must be counted by millions, and the cost of bread is proportionately diminished.

The loaf of bread "pays tribute" also to seeders, on which about six hundred patents have been issued. One effect of these machines is a uniformity and certainty in sowing, at a depth necessary to prevent winter killing in winter wheat, by which the crop is increased from one eighth to one fourth. The lowest proportion of gain for the crop of winter wheat of last year would amount to about 40,000,000 bushels; and it would have been impossible to produce the crop raised without the seeders. The simple fact that 800,000 seeders have been made during the past twenty years is proof enough that farmers find them profitable. Thanks to patents the seeders have been greatly improved in that time, and at the same time the price to farmers has been reduced fifty per cent.

Another "tribute" is paid to reapers and harvesters. The simplest reaper was the sickle. By the invention of the cradle a man's daily work in the grain field was increased seven-fold. With it a man could cut an acre and a half in ten hours, while two helpers could rake, bind, and stack the straw. Now with the combined reaper and binder a boy driving two horses can accomplish from ten to twelve times as much harvesting in the same number of hours. This machine alone has proved its capacity to save the country a hundred million dollars a year, with a proportional reduction in the cost of bread. And of like effect have been the numerous patents in each and all of the twenty-one stages in the production of the loaf.

The figures we have given are drawn from the argument of Mr. Coffin before the committee referred to. He goes on to show that the invention of a single improved cultivator has reduced the cost of raising corn from 2 to 3 1/2 cents a bushel. At this rate the saving on the crop of last year would range between twenty-five and fifty million dollars. By the old process of hand shelling the sheller got one tenth of the corn, and a man could shell from five to six bushels in a day. Now two men with a patent sheller will shell fifteen hundred bushels a day, and the regular charge is half a cent a bushel. The saving on a crop of thirteen hundred million bushels can be easily calculated.

The owner of an invention for making horse-shoes "taxes" the public to the extent of selling shoes at the market price of horse-shoe iron. He has a large establishment for making the iron, and by converting it into shoes is able to keep his

mills in operation at a small profit to himself, when otherwise they would have to remain idle, owing to the depressed condition of the general iron market. The regular saving in the cost of shoeing horses effected by the invention of horse shoe machines is twenty-five cents for each set of shoes. The general use of machine-made shoes in this country would reduce the aggregate cost of horse-shoeing from twelve to fifteen million dollars a year. In like manner patented machines for making horse-shoe nails are a "burden" to the blacksmiths to the extent of furnishing from two to three pounds of nails for the price required for one pound of hand-made nails. A machine for finishing carriage shafts has reduced this part of their cost from eighteen dollars to seventy-five cents, and thus enables the owners of the patent to send their shafts to England, Germany, and Australia, and yet compete successfully with the cheaper hand labor of those countries. A patented knitting machine (American), costing two hundred dollars, knits stockings at the rate of one sixth of a mill per pair for attendance, or sixty pairs for a cent. American patented looms have so reduced the cost of cloth making that our muslins and calicoes can be sold at the doors of English and other foreign mills cheaper than they can be manufactured there.

Thanks to patented machines, eighty-five per cent of the labor of making shoes is now done by machinery. A hundred million pairs were made on one class of machines last year. Labor is better paid than before the machines were introduced, much more is employed, the quality of the work is increased fully twenty-five per cent, and the cost of stock has advanced, yet, as Mr. Hyde pointed out, the price of shoes has been very greatly reduced, so much so that American shoes are finding sale the world over. The royalties on all the machines used in the best equipped factories, Mr. Storror was told by a large manufacturer, are less than would be the rent on the additional room which would be required to do the work by hand!

The manufacture of saws in this country has had to "pay tribute" to something like two thousand patents. At present nearly every process in this line of manufacturing is covered by a patent. Operatives are paid one third more than fifteen years ago, while their productive capacity has been increased, by patented processes, five-fold. As a consequence saws have been so cheapened as not only to almost entirely supersede those of foreign make at home, but to make possible a large export business to England, France, and all over the civilized world.

One of the most profitable patents of late years was that on the Bessemer process of steel making, a process which reduced the cost of a ton of steel from \$200 to \$55. The highest royalty charged by Mr. Bessemer was \$5 a ton, or a little over three per cent of the saving due to the process. The royalties on the machines which revolutionized the manufactory of hosiery and other knitted goods in England, did not exceed three per cent of the savings they effected. The aggregate royalties on the numerous machines used in shoe making are still less—3 1/4 cents per pair upon fine sewed work, and about 2 cents per pair on pegged work.

We have seen what enormous gains and savings have come to the country through a few agricultural inventions. The successful machines have paid their inventors handsomely; but their gains have been as nothing compared with those that have accrued to the users of the machines. And the same may be said of all successful patents. The public is the chief beneficiary. It is not possible for a patent to raise the price of anything. Its sole advantage to the holder consists either in enabling him to offer an entirely new and useful product to the world, as the Goodyear rubber patent, or in enabling him to furnish a better article at a given price or a standard article at a lower price than his competitors can with profit. In either case the public gains more or less during the life of the patent, and ultimately the entire profit of the improvement which the patent covers. The possibility of the alleged tribute taking hinges entirely on the assumption that the progress of invention would be the same in the absence of patents—an assumption which not only has no evidence to support it, but which all experience refutes.

WHAT IS LIFE?

The best our dictionaries can give in answer to this question is the verbal definition of the French encyclopedia, "Life is the opposite of death," a form of words giving no clew to the nature of the phenomena, the aggregate of which we call life. Language has many pairs of similarly contrasted words, such as up and down, high and low, hot and cold, heavy and light; and to say that any one of these is not its opposite adds nothing to the definiteness of our conception of either. Are life and death, like the others we have cited, merely relative terms? Or is there such an entity as Life, the addition of which to not living matter makes it living; the subtraction of which from living matter makes it dead? Is life the result of organization, or is organization primarily the result of life? What is life?

When primitive man asleep in his hut dreamed of war and the chase, of journeying to distant places, conversing with the dead, and the like, his natural inference was that there was in him a special self which left the sleeping body at will, yet was forced to return on the waking of the body. And since he saw in dreamland the counterparts of everything he saw in waking life, he as naturally extended to all objects, dead as well as living, the double existence he imagined for himself.

Accordingly from the very dawn of history the conception of life as something supernatural, something superior to the

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