

MACHINERY VS. MANUAL LABOR.

A correspondent of the New York *Herald* has been interviewing the leaders of the leather trade, in Massachusetts, now the chief industrial interest of that commonwealth. In his talk with Mr. Coolidge, a large manufacturer, he was told that eighty per cent of the work on boots and shoes was now done by machinery; whereat he "could not fail to remark what a terrible blow this machinery had inflicted on manual labor."

His study of the statistics of the trade, as gathered by Mr. Wright for the State Labor Bureau, only confirmed this impression. He found that in 1865 there were in Massachusetts 206 boot and shoe factories, employing 52,821 persons. Now, while machinery has increased the productive capacity of each workman tenfold, there are 1,500 boot and shoe factories, employing only 51,280. A few lines above in the same article, Mr. Coolidge is credited with saying that there are 3,500 firms in Massachusetts engaged in the making of boots and shoes; and in the next day's *Herald*, the correspondent is accredited with the discovery that in 1865 there were employed in Massachusetts 30,000 more shoemakers than to-day.

Somebody's arithmetic is evidently at fault. The probability is that the figures copied from Mr. Wright's tables are most to be trusted; and that we are to take as evidence of the power of machinery to turn men out of employment the circumstance that there has been a diminution of about 1,500 boot and shoe makers in Massachusetts since 1865 (52,821 less 51,280), while the value of the annual product has been increased by upwards of \$70,000,000.

Admit that it would be a serious thing to them to deprive 1,500 men, women, and children of their means of earning a living, notwithstanding the fact that the same cause increased tenfold the productive capacity and the earnings of 50,000 other men, women, and children. But has the introduction of machinery in shoemaking diminished the demand for labor in Massachusetts by that amount? The evidence does not show it. How many additional men, women, and children are required (above the number employed in 1865) to make ready for market, transport, and sell the additional \$70,000,000 worth of boots and shoes? How many men are employed in making the leather used in making the increased number of boots and shoes? And how far would 1,500 operatives go to supply the demands of the numerous establishments devoted to the manufacture and sale of shoe-making machinery?

"Fifteen years ago," said Mr. Coolidge, "quite a business was done in importing calfskins to this country. We imported also a large quantity of manufactured goods from abroad for the retail business. All this is changed now; instead of importing we export. We are exporting leather very largely, and our facilities for manufacturing are being continually improved. There is no country in the world that can compete with us, as with the aid of the twenty-seven firms right around us here doing nothing else than selling boot and shoe machinery we can in a moment have all defects remedied; and in fact hardly a week passes but these men improve our machinery."

The introduction and improvement of machinery do undoubtedly make necessary a continual readjustment of manual labor, but it never diminishes the aggregate demand for such labor. Even in the extreme case of shoemaking, where within a few years four fifths of the work has been turned over to machinery, the increase of production made

as many. But it is not. Therefore machinery has dealt a terrible blow to labor!

The essential condition of such an increase of production, namely, that there must be a corresponding widening of the market through diminished cost, possible only by the use of labor saving machinery, such loose reasoners leave entirely out of account.

M. VICTOR REGNAULT.

M. Victor Regnault was one of the few masters of science who have attained equal eminence in two great departments of philosophy, and it is even questionable whether he



M. VICTOR REGNAULT.

achieved his highest reputation as a chemist or as a physicist. As a teacher and chemical investigator he has had few peers, and his large number of published works attest the thoroughness of his grasp of chemical science. As a physicist, his researches on the nature of gases are classic. He studied all the great experimental questions relative to heat, established the empirical laws of the elastic force of vapors, and measured their numerical coefficients with an accuracy that is marvelous, in view of the colossal nature of the task which he undertook. He was the father of Henri Regnault, one of the ablest painters France has produced, but who fell during the Franco-Prussian war. It is said that grief for this bereavement greatly impaired M. Regnault's health; and he suffered a still further loss in the destruction of the notes of his investigations, continued over many years, by the Prussians during the same conflict. After long illness he died in January last at the age of 68 years. We take the portrait herewith presented from *La Nature*.

PROPOSED BRIDGE OVER THE THAMES.

The increased traffic of London has reached such a point that the construction of a new bridge over the Thames below London bridge has become desirable. The Metropolitan

Board of Works of that city has been for some time engaged in the discussion of plans, regarding which there is much difference of opinion. We copy from the London *Engineer* an illustration of one of three alternative designs proposed by Sir Joseph Bazalgette. In a future issue we shall illustrate another of Sir Joseph's plans—the one which he deems the most practicable—in which he proposes to construct the largest arch in the world, crossing the Thames near the Tower by a single span of 850 feet. The form shown in our engraving is much less expensive, but offers considerable ob-

struction to navigation. It is of a composite type, being a double cantilever bridge with a central bowstring span of 444 feet. Its appearance is quite graceful. Some doubt is, however, thrown upon the feasibility of securely placing the cylinders carrying the cantilevers, owing to the deep and narrow tideway and the nature of the Thames bottom, and it appears more likely that the single arch will be adopted.

BASTARD PATENT RIGHTS.

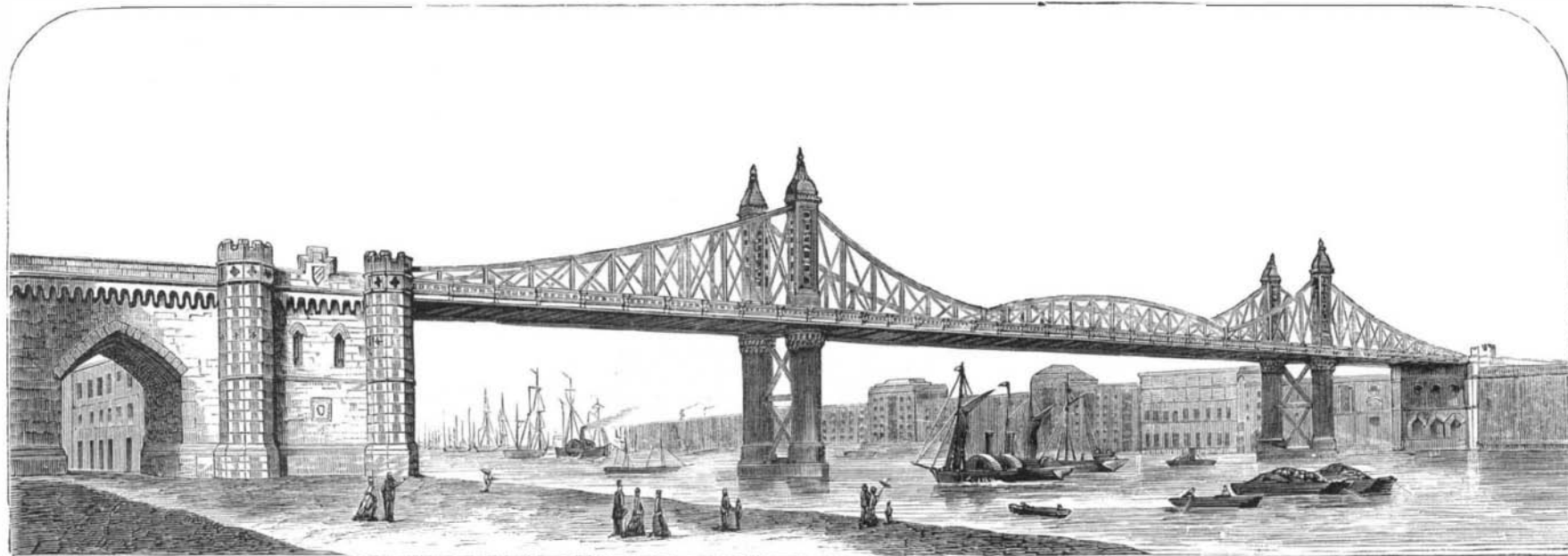
Mr. Saylor's bill for the better security of property in patterns for metal castings (H. R. 2022) might better be styled a bill for securing to certain parties more than patent privileges in the absence of patent rights. It forbids the use of any metal casting as a pattern in moulding unless by the written consent of the owner or producer of the original pattern from which the casting was made; thus giving to pattern makers, unconditionally and for nothing, greater protection than inventors can secure through the agency of the Patent Office or the copyright act. The man who makes a positive and useful addition to the world's scientific knowledge or industrial achievement may enjoy a temporary exclusive control of his invention or discovery on proving his right and paying certain fees. Mr. Saylor's bill proposes to give to every maker of a moulder's pattern, however common and simple its design, all a patentee's privileges for nothing and forever! and this at a time when the same legislative body has under consideration a bill for depriving inventors of no small part of the limited protection which patents have hitherto afforded them.

No doubt it is very annoying to pattern makers to have their unpatentable designs appropriated by others without their having to pay for patterns, but that is one of the conditions of every trade. Whatever is good and taking is sure to be copied with small regard for the introducer's feelings. Pattern makers suffer no more than other people, and there is no good reason why they should be specially exempted. There is certainly no just ground for giving them all the benefits of the patent law while exacting none of its conditions.

The sole object of the patent system is to encourage original research and invention for the advancement of science and the industrial arts; and it aims to secure that end by recognizing a temporary property right in new and useful inventions. No such end is proposed by Mr. Saylor's bill; nor would any such effect be produced by it. It aims simply to give special privileges to a class which has no right to such privileges. The bill was referred to the Committee on Patents, but might as fitly have been sent to a Committee on Indian Affairs.

The Ticinese in California.

One of the most industrious, frugal, temperate, and well-to-do elements in this cosmopolitan State is the Ticinese, composed of former inhabitants of the Canton of Ticino, Switzerland. Their number is estimated at 7,000, distributed principally in Marin, Napa, Santa Clara, and San Luis Obispo counties. The great majority are engaged in the dairy business, and notably so in Marin county. It is stated upon good authority that they manufacture fully one half the amount of butter and cheese made in this State, and the products of their labor always bring the highest price in the market because of the excellence of quality and fullness of weight. Quite a number of the Ticinese are small farmers, some of whom own their own land, but as a rule, both

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possible by the change, and the necessary development of collateral lines of productive labor, as in the manufacture of the new machinery and the production of the additional raw material used, far more than compensate for the relatively smaller number of operatives required. The logic of uncritical thinkers on this point appears to be something like this: Before the introduction of machinery the annual product was so much; the number of operatives so many. Today the annual product is ten times what it formerly was; consequently the number of operatives should be ten times

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for farming and dairy purposes, the land is rented. Their property in milch cows, horses, wagons, and other things necessary to their business, is very large. As a reward of their unceasing industry and frugality they are never "hard up," and, when the proper occasion offers, are generous to a fault in spending their money. In their feasts and convivial parties they are as jolly a lot of fellows as ever sat down to do honors to the inner man. The Ticinese are a branch of the Italian family, and all speak the Italian language, their mother tongue.—*San Francisco Chronicle*.