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## THE WESTFIELD EXPLOSION. THE VERDICT--WARRANTS FOR THE ARREST OF THE PRESIDENT, SUPERINTENDENT, AND ENGINEER. WHO ARE THE REAL CULPRITS?

The shattered *Westfield* lies at the foot of East Thirteenth street, a melancholy witness of the horrors of the memorable 30th of July. Most of the fatally injured have been buried, but there still remain many maimed and crippled for life. The public have loudly clamored to know whom to blame for all this killing and maiming, and the coroner's jury have, after one of the most thorough investigations on record, found a verdict against the company and the engineer Robinson, in the following terms:

"That the deceased, Andrew Coyle, and others died through a rupture or explosion of the boiler of the ferryboat *Westfield* on July 30, 1871; that said explosion or rupture was caused by a flaw in the iron and by the negligence of the engineer, Henry Robinson, in carrying an over pressure of steam; that the company are responsible for the disaster, as the defect could have been detected if the Staten Island Ferry Company had had a competent superintendent, engineer and mechanic in their employ, and are, therefore criminally negligent. We recommend the District Attorney to take prompt action in the matter. We also think that the Government inspection is very imperfect as now conducted."

One juror, Chas. A. Kirtland, dissented from this verdict, as follows:

"I find that Andrew Coyle and others came to their death by reason of a rupture in the boiler of the steamer *Westfield*, in consequence of defects which could not be discovered by the ordinary and usual manner of inspection."

Warrants were at once issued for the arrest of President Vanderbilt, Superintendent Braisted, and the engineer Robinson, which will bring the matter before the Grand Jury. The press, as a rule, strongly advocates the indictment of these men, and the public sympathizes with the feeling that the company should be severely punished. This feeling has been greatly strengthened by the action of the company, since the disaster, in regard to its other boats. One of these, the *Middletown*, has upon it a boiler that on inspection was found so rotten that holes were easily knocked through it with a hammer. This boat was taken off for repairs, and after patching the boiler, the boat was again placed on duty and is now making its regular trips. This is interpreted by many as a defiant disregard of public opinion, and the effect has been to exasperate the already indignant feeling pervading the community.

But where does the real blame lie? The company complied with the law. The boiler of the *Westfield* was duly inspected; the safety valve, and steam gage were in good working order, the pressure, though a pound or two above that allowed, was not, according to the evidence, shown to be that which would endanger such a boiler known to be sound.

Was the boiler a sound one?

From the method of inspection adopted by the United States inspectors and their testimony, this question cannot be answered. The evidence on this point shows clearly that Government inspection is a farce. The testimony of one ex-inspector shows an ignorance of boilers and steam that would disgrace a tyro, and a present inspector is physically incompetent to inspect a boiler, because he is too large to get through an ordinary sized manhole. We unhesitatingly avow our belief that had the boiler of the *Westfield* been inspected in the manner described by Mr. McMurray, whose evidence we publish in another column, the boiler would have been condemned and the catastrophe averted.

If there is any fact whatever proved beyond dispute, it is that corporations will concede no more to public safety and comfort than the law compels them to do. Inspection, it seems, as now conducted by legally appointed officials, cannot be relied upon. It permits the companies to shift the responsibility from themselves, and throw it upon irresponsible men who can neither pay damages nor be compelled to undergo any worse penalty for neglect than impeachment.

But, it may be said, the civil damages, that companies may be made to pay for injuries received from accidents arising from neglect, should be sufficient to make them careful. This would, doubtless, be true, were law and justice uniformly meted out to wrong doers. But any one who has seen the way courts are manipulated by monopolists, and how laws are shaped, by money influence, to provide loopholes of escape for guilty corporations, knows that, as a rule, a prosecution for damages of this kind, is one which poor men will find so tedious and burdensome, that nine out of ten cases will be settled by the payment of nominal sums to sufferers, and that such litigations do not produce that wholesome fear on the part of the defendants, necessary to bring about the desired reform.

It is, then, primarily, in defective legislation, and in the inefficient execution of law, that we find the cause of the frightful disasters following each other in rapid succession in steamboats and railways, and coal mines. And is not the low moral sense of the public the source of such legislation? Are not such disasters a part of the legitimate fruit of the looseness of public morals? and will there ever be a change till the people, as a mass, suffer change?

We believe a change is coming, and that the apathy with which a large majority of Americans regard what are known as public duties, will soon be shaken off, not merely by steamboat and railroad explosions, but by those of a more serious character—social upheavals that will shake not merely fabrics of iron and wood, but the whole framework of society.

## STATE INTERFERENCE WITH PATENTS.

By the Constitution of the United States, sole power is conferred upon Congress to create proprietary rights in patents for inventions; with which rights no State government has any authority, either directly or indirectly, to interfere. Indeed, it is the bounden duty of State governments and State officials, if they are called upon to act at all in the premises, to support the laws of Congress in respect to patents and patentees, not hinder or distress them.

Cheats and villains are found in every community, and they resort to all sorts of devices for swindling purposes, patents amongst other things. If they sometimes succeed in duping the foolish or the unwary, that is no reason why honest men, in the exercise of legitimate privileges, should be subjected to indignity or placed under the ban of suspicion. The old maxim is a good one to the effect that it is better for the guilty to go unpunished than that the innocent should suffer.

The legislatures of some of our Western States, under pretext of protecting their citizens against patent swindles, have passed special laws that are not only obnoxious to honest people, but clearly unconstitutional.

Some of these laws make it almost a penitentiary offence for a man to appear on the streets with a *bonâ fide* patent in his pocket. It is as bad or worse than the carrying of concealed weapons. And if an inventor should so far forget himself as to open his mouth with reference to a sale of his patent, not having first conformed to the requirements of some absurd State law, he is at once arrested, imprisoned in the common jail, and robbed of his money by unjust fines.

The seal of the United States granted to him as a sign of honor and reward is thus perverted into an instrument of abuse, and the deserving inventor, instead of profiting by his discovery, reaps only ruin and disgrace.

It seems incredible that this state of things can exist; but it does exist, and we have had many complaints from victims in different parts of the country.

We would urge patentees and their agents everywhere, not tamely to submit to such outrages, but to resist them by all legal means in their power. The issue of a patent is a grant under the broad seal of the United States, declaring that holder may freely enjoy the right to make, sell, and use his invention, and grant similar rights to others, in all the States and Territories of the Union.

The attempt of any State Legislature or State Court to restrict, regulate, or in any manner interfere with the operations of patentees or their agents in selling their patents, is unwarrantable. We think it probable that any State official who engages in such interference, is liable to both civil and criminal prosecution under the laws of the United States.

In this connection and in corroboration of the views now and heretofore by us expressed, we republish on another page the able decision rendered last year by Judge Davis, in the United States Circuit Court at Indianapolis, Ind., in a case similar to those we have suggested. The patentee's agent was thrown into prison simply for having offered a patent right for sale. But he had spirit enough and money enough to resent the outrage, and, on *habeas corpus* proceedings, the Judge ordered his instant release, and declared the Indiana law to be unconstitutional and void.

## RATING STEAM BOILERS.

*Preliminary Report of the Committee appointed by the Franklin Institute to Inquire into the Modes of Determining the Horse Power of Steam Boilers.*

Our readers will remember editorial allusions to the existance of the above named Committee, called forth by a letter on the subject by Mr. Brown, one of its members. The articles referred to were published on pages 199 and 231 of our last volume. In them we took the ground that boilers ought not to be considered in connection with engines in rating them for horse power, nor in connection with the fuel consumed, as proposed by Mr. Brown in a paper read by him before the Franklin Institute.

We are now in possession of the preliminary report of the Committee, in which the views we expressed in our former articles are sustained.

The report, considering that it is a preliminary one, is quite elaborate and interesting. It reviews the origin of the term horse power, the standard as adopted by Watt, and then proceeds to discuss the various rules for computing the horse power of engines, including that understood by the term nominal, the British Admiralty rule, and Brown's rule for computing the power of high pressure engines. It then passes to the subject of the horse power of boilers, upon which it says:

"That at an early day, although subsequent to Watt's time, the evaporation of a cubic foot of water per hour, from and at the temperature of 212°, was ruled to be the measure of a nominal horse power.

"All subsequent authorities, without exception, have adopted this standard;—in the *steam boiler* they make no distinction between the nominal and actual horse power; there is only one definition of the term, and that is the evaporation of a cubic foot of water as previously stated. It is with this definition that we use the term horse power.

"This rule appears yet to be applicable, and it only needs some statements of conditions, such as will allow purchasers and sellers to conform to this requirement."

The report then passes to consideration of the conditions referred to, the first of which named is the size of chimneys and flues.

"For stationary boilers with natural draft, assuming that the chimneys and flues shall be adequate, in size and form, to afford the necessary draft, and that the fuel is coal of average good quality, it appears that nearly all writers give about $\frac{5\,5}{1\,0\,0}$ square foot of grate to each horse power of boiler; and as this ratio gives a very small grate for the lesser number of horse power, about two feet are added as a constant."

The heating surface next claims attention. On this point, the Committee says:

"The arrangement and extent of heating surface should be such that at least the average result by evaporation of 9 lbs. of water from and at 212° with one pound of good anthracite coal burned (over and above ashes) shall be attained.

"As there are 59·48 pound of water at 212° in a cubic foot, it follows that 6·61 pounds of coal will be needed for its evaporation.

"Adopting the more convenient number of 7 lbs. as a liberal allowance, the rule would be $\frac{7 \text{ H. P.}}{0{\cdot}55 \text{ H. P.} + 2}$ = the number of pounds burned per hour per square foot of grate; or for boilers of—

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|---|---|---|---|---|---|---|---|---|---|
| 10 | H. P. | 7½ | sq. ft. of grate | | 9·33 | lbs. per hour per sq. ft. of grate. | | | |
| 20 | " | 13 | " | " | 10·76 | " | " | " | " |
| 40 | " | 24 | " | " | 11·66 | " | " | " | " |
| 60 | " | 35 | " | " | 12·00 | " | " | " | " |

The hight of chimneys, above the surface of the grate, should be from 50 to 60 feet. The rule of Watt for obtaining areas of chimneys, based upon the number of pounds of coal consumed per hour and the hight of the chimney, is not, in the opinion of the Committee, applicable to powerful boilers with internal flues, though it will answer for land boilers of moderate size. For the former class of boilers, the sectional area should be from 6 to 8 square inches per horse power.

Upon grate surface the following remarks are made:

"When a forced draft is employed, as in the locomotive, we find the heating surface 65 times the grate area, and 80 lbs. of coal burnt per square foot of grate.

"These general conditions, dependent upon each other being fulfilled, namely, a grate surface so proportioned to the draft as to admit easily the combustion of 7 lbs. of anthracite coal, or combustible equal to that amount per horse power per hour, and the escaping gases not over the temperature before mentioned; it may be safely asserted that a boiler so set, of any given horse power, failing to evaporate that number of cubic feet of water per hour, with that amount of coal, does not produce its nominal horse power."

The Committee, however, disclaim the intention to limit the test of boilers by the conditions of chimney and grate surface as stated, but only put them forward as good average practice.

They conclude the report by some general remarks upon the setting of boilers, etc., and a request to engineers who have made or may make investigations relative to the heating surface of boilers to forward the particulars to the Secretary of Franklin Institute. Edward Brown, Robert Briggs, John H. Cooper, W. Barnet Le Van, and William H. Wahl constitute the Committee.

## OBJECTIONS TO DARWINISM.

Darwin's theory may be epitomized as "the persistence of the stronger," "the survival of the stronger," "those forms of life survive which are best adapted to survive." There are a good many commonplace facts which appear to go contrary to this theory, and they ought to be explained by the