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CRIMINAL NEGLIGENCE IN RAILWAY MANAGEMENT.

On the evening of January 13, an Albany express train on the Hudson River Railroad, drawn by two locomotives and bound for New York, was stopped by an accidental or unauthorized application of the air brakes just after the train had passed a sharp curve and a deep rock cut near Spuyten Duyvil Station, at the upper end of New York Island. The rear of the arrested train was shortly after run into by a regular train known as a Tarrytown special, also bound for New York. The rear car of the express train was wrecked by the collision and quickly fired by an overturned stove. Several passengers were instantly killed, and others, caught and held by wreckage, were suffocated or burned alive. In all eight lives were lost, including that of Senator Wagner, inventor of the drawing room cars which go by his name.

A very careful investigation of the conditions and causes of the disaster was made by a coroner's jury, largely composed of civil and mechanical engineers, resulting in a verdict which is quite exceptional in its sweeping condemnation of the conduct of the trainmen and the managers of the road, who were individually held responsible for the loss of life through their criminal neglect of duty.

Specially remarkable and encouraging are the findings of the jury relative to the culpability of the superintendent of the road and the officers of the New York Central and Hudson River Railroad Company: the former in neglecting to provide efficient safeguards against accident at a peculiarly dangerous part of the road; the latter in neglecting to provide suitable implements for the rescue of passengers in danger, and proper means for extinguishing fires on the trains, and in not establishing the competency of their employes by proper mental and physical examinations to test their qualifications for the responsible and critical duties imposed upon them.

And, as a further expression of their opinion, the jury affirm that, with the experience of fifty years of railroad management, and with the appliances in general use for the prevention of like disasters, there appears to be no palliation whatever for the criminal carelessness and disregard for human life exhibited by the employes of the company. The conduct of these employes removed this calamity from the chapter of accidents, making the result of destructive agencies at work as much a certainty as the discharge of a piece of artillery. The only surprise is that the slaughter was not greater. It could not well have been less.

The evidence by which the justness of this verdict was supported and made imperative was not only overwhelming in its sufficiency, but it clearly indicated a general indifference to the safety of passengers on the part of the conductor and the rear brakeman of the express train, and the superintendent of the road, that is little less than appalling.

It remains to be seen whether the action of the grand jury and the courts in criminal proceedings against the guilty parties will be such as to discourage similar misconduct and neglect of duty by railway officials and servants in the future.

The safety of the arrested train in an unusually dangerous position devolved upon a train man who could not read, and who testified that, out of forty-five or fifty similar stoppages of the train while he had been rear man, he had gone back to flag following trains not more than four or five times, and then without instruction from the conductor of the train. This time he did not go back, and the disaster was an immediate result.

After the collision the loss of several lives might have been prevented had the train carried water buckets or other means of extinguishing fire, or axes to enable those unhurt to open the side of the burning car and release those who were wounded or caught in the wreckage. Or the fire itself might have been prevented had the heating apparatus of the car been of a safer sort. Still better, all liability to collision under such circumstances might have been prevented (at least not left to the hazard of an incompetent and negligent trainman) by the use of inventions well known to railway managers, or which would be well known were it not their deliberate policy to refuse to consider patented inventions (the use of which would involve payment of royalty to the patentees) unless personally interested in the patents.

It is too much to expect that the action of the courts in this case will be such as to convince railway managers and superintendents of the impolicy of the course they now pursue with respect to inventions designed solely to increase the safety of passengers. But one natural effect of easily avoidable slaughters like that at Spuyten Duyvil is to render the public impatient of delays in the adoption of safety appliances; and while it would not be wise to dictate what specific devices shall or shall not be used on the railways, laws may be passed, in consequence of such accidents, so increasing the penalties for killing or maiming passengers where well known precautions have not been taken to prevent such disaster, that railway managers will not dare to run the risk of not employing them.

SOLID PETROLEUM.

The conversion of petroleum into a solid and safe substance for transportation seems to be attracting considerable attention in foreign countries where no pipe lines exist. A St. Petersburg paper says: How shall we transport petroleum? is to-day the most important question for all branches of the naphtha industry, and no less so for the consumers who live at a distance from the wells. All the methods of transporting petroleum hitherto in use, whether in wooden or paper barrels, in iron pipes, or iron caissons

that are placed on ships or cars, possess disadvantages which are sufficiently well known, especially as regards leakage and evaporation, and also the great danger from fire.

These misfortunes which afflict so severely both dealers and consumers and increase the cost of an article of such importance in domestic economy, have been banished at a single stroke by the discovery of a German named Dittmar, who has succeeded in converting liquid petroleum into a solid substance. As early as 1872 the idea arose in America of solidifying petroleum so as to put it into a more suitable form for transportation, and in that year no less than twelve patents were taken out for this object without any single one of them being found practical. What a range such a discovery would cover, as would change petroleum into a solid wax-like body, can scarcely be conceived of, especially for the Caucasian naphtha industry, where there is a lack of suitable wood for making the barrels, which has a very serious effect upon the industry. The Moscow Zeitung also contains a thorough discussion of the new invention.

Solid petroleum has not yet come into market because the patents have not yet been issued, but a company has been formed in Russia for carrying out the invention. The cost of conversion is not to cost over six kopeks per pud, while the barrels, which will then be superfluous, increase the price of petroleum by 55 kopeks, but the leakage, which would no longer take place, is included in this. It may be added that solid petroleum can be readily converted into the fluid form for pouring into lamps.

To this and other remarks that have appeared in the technical journals the Russian Pharmaceutical Zeitschrift adds the following explanations from the pen of E. Johanson. He found that petroleum when heated would take up a certain quantity of dry soap, and that the solution on cooling would form a jelly, which when ignited drops off in pieces that soon go out like burning sealing wax. Dilute acids, like acetic acid, restore the fluid condition (evidently owing to a decomposition of the soap). In this way he explains all that has been asserted and claimed for the solid petroleum.

Only one and a half per cent of soap is required to form a gelatinous mass like opodeldoc, but with three per cent of soap it is much more firm. In this operation there separates a small quantity of liquid products that do not become solid, and which probably consist of the lower boiling constituents of petroleum. The presence of these in the solid mass is, of course, dangerous, and still more so because it always has to be liquefied before it is used. The contents of the wooden boxes used in transportation will soon ooze through the wood and becoming mixed with air will give off explosive vapors. On this account the author comes to the conclusion that the advantages of solid petroleum are entirely imaginary, as being a tedious, troublesome, expensive, and dangerous operation.

THE STOCK CAR COMPETITION.

A pamphlet report of the "Doings of the American Humane Association," at its annual meeting last fall, gives in full the report of the judges on the \$5,000 prize offered by the association for an improved cattle car. It will be found an interesting if not an instructive document to all who took an interest in the competition or retain an interest in the questions of humanity, health, and economy involved in the transportation of live stock.

It will be remembered that the judges decided that none of the designs offered in competition met the conditions of the award, and accordingly no prize was given. The money which had been subscribed for the purpose, with accrued interest, remains in the hands of trustees to be used in aiding the introduction of improved stock cars and in such other ways as may best secure the end desired by the subscribers to the fund.

The principal fact brought out by the competition and the investigation of cattle car patents that it called out, was that inventors had already pretty thoroughly covered the ground; in other words, when cattle suffer hunger, thirst, and other injury on the way to market it is not for lack of devices to prevent such injuries, but because the inventors of improved cars and appliances have not been able to get the railway companies to use them.

The report mentions a number of plans and models which were submitted for an opinion of their value, with a distinct provision that they were not in competition, their owners holding them at a higher figure than \$5,000. Besides these 636 different competitors submitted 710 models and plans. A large portion of the models and drawings were very crude, but some were finely finished and executed. Every State and Territory in the Union was represented, except the Territories of Washington and New Mexico. England, Russia, and Switzerland were also represented, while the Dominion of Canada contributed liberally. Illinois sent 51 models and 18 plans; Pennsylvania sent 47 models and 27 plans; New York sent 43 models and 15 plans; Ohio sent 37 models and 18 plans; Indiana sent 21 models and 13 plans; Massachusetts sent 19 models and 26 plans; Michigan was the seventh, Iowa eighth, Missouri ninth, and Minnesota tenth in the number of contributions. Among the competitors were eight women, from the same number of States. One competitor was a young lad of fourteen years; and one model was sent by a man who stated that he had never even seen a railroad train in his life! Seven competitors were preachers.

To test the originality of the plans and models they had to be first compared with the descriptions and claims of the 111 patents upon stock cars and appliances granted since the