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THE ELEVATED RAILBOAD NUISANCE.

The steam elevated railroads in this city are amply fulfilling the predictions of those who, like ourselves, have maintained that they were not suited to the needs of rapid transit here, and would, in all probability, be found an oppressive nuisance. On both lines accidents have recently occurred with alarming frequency. Two persons have been last few days. A workman had his head nearly cut off by a through several weeks. locomotive while painting the iron work. Sparks falling persons have been struck and injured by objects falling from 'the others of iron.

merous runaways, and one person was seriously injured to one face of each plate, forming a receptacle for a measwhile riding on a street car through his leaning out and 'ured quantity of water. striking one of the supporting pillars of the road above. On the New York Elevated line a terrible disaster, which would temperature, was then, in turn, placed over the carefully have involved the precipitation of a whole train filled with adjusted flame of an oil stove, and the time of evaporation passengers upon the sidewalk beneath, was so narrowly es- noted. caped that the public will feel a natural trepidation iu passing over such portions of the aerial lines as are not provided throughout the experiment, and registered by a high grade with guard fences. Some mischievous boys, taking advan- thermometer, with bulb secured just under the lower surtage of the ladders formed by the lattice work pillars, face of the plate. climbed up to the track and placed heavy paving stones on the rails. The train was greatly shaken, but fortunately the tions in each case and to eliminate all causes of error. guard rails kept it on the track and prevented its destruction. This is only the beginning of a probably long chapter of serious disasters, and it is suggestive to remember that brightened, and then blackened with lamp-black. the line on which nearly all have occurred is less than five miles long, and has been in operation but three weeks. How tin steel possessed a heat-transmitting power-determined many people the elevated railroad companies propose to kill, by evaporation of water at the pressure of the atmosphereor injure daily after their whole forty miles of road is in about 25 per cent higher than the mean of the iron plates; operation, the long-suffering citizens of this metropolis will that the evaporation of the poorest steel plate was about 15 discover in course of time.

able to the elevated system. Many of the most determined time and under like conditions than the poorest of the iron. adherents of the Metropolitan road, while it was still in embryo, now are loud in their denunciations of the annoyances while in the iron plates there were great variations in to which it subjects them. Nothing whatever has been done quality. to reduce the deafening racket of the trains as they thunder over the resounding iron bridge, every sound-vibration of of the plates, and Messrs. Whelpley & Storer held that absowhich is intensified and reflected downward by the huge lute proof of the correctness of their theory was thereby sounding boards afforded by the car bottoms. Not content established, to wit: that the presence or absence of non-conwith throwing sparks, carbonic acid gas, and smoke into ducting substances-cinder, oxides of iron, and other imwindows, necessarily kept open during the hot weather, the purities-determines the heat-transmitting power, and concompanies supply a detestable grade of coal especially rich sequently, in a great measure, the relative values of iron in sulphur, and the result is that the unfortunate dwellers and steel for boilers. along the route, as well as the passengers, are nauseated by the stenches of sulphureted hydrogen. It is like putting a foul chimney in front of every one's bedroom window.

The management of the new line are profuse in promises of what is going to be done, and the urgent necessity for improvement begets the strong hope that their efforts will amount to something more than empty words. At the present time cars are run not nearly approaching sufficiency in numbers to accommodate the travel. And they are packed so full that the trip from terminus to terminus, about four and a half miles, frequently occupies, including stops, forty minutes. This is practically no improvement on the horse ence of cost between steel and iron. cars.

The only remedy for all these dangers and nuisances is to sink the tracks. This had to be done, and public opinion compelled it, on the Fourth avenue surface road, and the present underground line is a grand success. The Metropolitan road can put its iron tunnel under ground as well as above it. The present girders which support the rails can serve as the roof, and the track can be laid on the bottom of the cut. As matters stand now, the citizens of New York are receiving sparks, dirt, stenches, a deafening racket, dark, damp and obstructed streets, depreciated property, danger of trains leaving the track, and danger from runaway

below, in return for valuable franchises for which not a cent is paid, too high rates of fare, and for the privilege of being packed in cars like cattle and slowly transported over a limited portion of the city.

STEAM BOILERS.

The relative advantages of steel and iron for boilers have been the subject of much discussion and experiment, by which the superiority of the former, in respect to strength cent patents. and durability and the advantage in weight, has been clearly established; but its claims to superior economy do not seem have been so convincingly advocated as to induce its sub stitution, in any considerable degree, for iron.

Studying carefully the reports of boiler tests, and with some experience in such matters themselves, Messrs. Whelpley & Storer formed a theory respecting the causes of many of the discrepancies which were found in the services of boilers, and instituted a series of experiments to demonstrate its correctness.

Though conducted on a small scale the experiments were killed falling from the Metropolitan structure within the made with great care, and were repeated and continued

Thirteen pieces of boiler plate, of uniform thickness and from a furnace-have set fire in one case to bales of cotton, a foot square, were obtained from manufacturers and boiler and in others to awnings in the street below, and several makers. Three of these were of Siemens-Martin steel and

Each plate, holding water of ascertained quantity and

As constant a temperature as possible was maintained

All possible precautions were taken to secure like condi-

In the first instance, each plate was tested in the condition in which it was received, then with the under surface

The mean of the results established that the Siemens-Marper cent higher than that of the best iron, and that the best This, moreover, is but one class of the nuisances charge- plate of steel evaporated 40 per cent more water in a given

The qualities of the steel plates were very nearly alike,

The cause of these differences was now sought by analyses

The steels, owing to their mode of manufacture-the cinder separating from the molten metal-were practically free from non-conducting substances, while the irons, from which all such impurities cannot be eliminated in the process of manufacture, varied in their values according to the percentage of cinder and other foreign matters remaining in them. Of the irons the charcoal iron stood highest.

These novel experiments appear to demonstrate that, in conjunction with superior safety, great saving in fuel may also be assured by the use of steel for steam generators-a saving so considerable that it would soon offset the differ-

PROGRESS OF OUR WESTERN INDUSTRIES.

The manufacturing interests of the West are remarkable in many respects, not the least remarkable being their rapid development and their dependence on patented inventions. A few years ago it was thought that the fertile States north of the Ohio and the Missouri were a paradise for farmers, but never could be other than agricultural in character. Even yet there are few persons who do not receive with surprise and incredulity any reference to that region as one pre-eminent for its manufacturing industries, notwithstanding the fact discovered by the census of 1870, that at that time the manufactured products of Ohio, Indiana, Illinois, Missouri, Iowa, Minnesota, and Wisconsin exceeded the agricultural products of those States by \$76,000,000 a year. Since then the manufacturing interests of the West have increased with a rapidity positively amazing; and unlike the great factories of the East, very few Western establishments are engaged on standard products made by time worn processes. In almost every case they are based on re-

As an illustration of Western growth, take the city of Springfield, Ohio, to which the Graphic of June 10 gives a double page of illustrations. Fifteen years ago it was simply a pleasant inland town without any specially promising aspect. To day it is one of the handsomest cities in the State, with a multitude of manufacturing establishments, turning out products to the amount of \$10,000,000 a year. These varied interests the Graphic reporter finds in a highly prosperous condition. "Neither the business men nor the manufacturers wear long faces. Their wares find sale in every part of the United States, and the 'Champion City' is well known as one of the leading manufacturing points in the West, and as having played an important part in securing for Ohio her enviable reputation throughout the world as the home of inventive genius and skilled mechanical labor." The leading industry of Springfield is grouped around the champion reaper and mower, to the production of which a capital of \$7,000,000 is devoted, giving employment to thousands of men, requiring five mammoth manufactories to do the work, and all taxed to the utmost to meet the demands of their customers. In addition the Graphic enumerates

. CHESS RECORD.—Biographical Sketch and Portrait, with one Prob-lem, of G. N. Cheney, Syracias, N. Y.—Rousseau as a Chess Player.— Frank Lealle's Problem Tournament of 1858.—Letter Froblem.—Prob-lem by J. H. Morrison. VЦ

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Most of the users of boilers are ready to admit that the steel boiler is more durable and less liable to fracture and

explosion because of the homogeneity of the metal, but they are not sufficiently assured that these advantages offset its higher cost.

The hard times, too, intensify their disinclination to any change, and especially to the spending of time and money on experiments. Consequently iron boilers, notwithstanding their defects, still hold their prominent position as steam generators.

Knowing that suggestions which may result in greater safety to life and property, or to economy of manufacture, are of especial value now, and therefore pretty sure to be well received, we call attention to certain experiments that were made not long since, to determine the heat-transmitting powers of iron and steel boiler plates, feeling certain that our doing so will induce thorough investigation into the matter on the part of the manufacturers of each kind of plate. | nearly a hundred manufacturing establishments, some