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PRICES AT THE WORLD'S COLUMBIAN EXPOSITION.

The specter of extortion is in danger of keeping many people from attending the World's Columbian Exposition, not, however, so much because of its actual presence, as because of the fear of its existence. During the first week or two that the Exposition was open there was without doubt excuse for these fears, but this is a thing of the past now. A typical case was that of three dollars a day for a room in a shack of a building, the entire furnishing of the room costing just forty-five dollars. Inside the grounds some of the restaurants charged most unreasonable prices, particularly in the cases of two foreign restaurants, which seemed to be run on the plan that Americans were gullible and would pay any price without complaint.

Investigations by representatives of the SCIENTIFIC AMERICAN lead to the conclusion that visitors at the Exposition need have no fear of excessive charges if they use judgment and discretion in securing accommodations and making other arrangements. The Exposition management has no jurisdiction whatever over the hotels, and cannot therefore regulate their prices, but fortunately there is no need of such jurisdiction, because of the intervention of the law of supply and demand. Within walking distance of the Exposition grounds are comfortable accommodations for over one hundred thousand people, while throughout other parts of the city are accommodations for two or three times as many more people, and in all parts of Chicago are plenty of honest landlords whose prices are reasonable and who can be relied upon not to resort to extortion. Intending visitors who wish accommodations secured in advance, and who have no other means of securing them, should apply to the Bureau of Public Comfort connected with the Exposition management, which was organized for the special purpose of protecting visitors from extortionists. There is no reason why visitors should fall into the hands of sharks, except their own carelessness. As with rooms, so it is with restaurants. Throughout the city are innumerable restaurants which furnish meals at reasonable rates, so that strangers with limited means can secure as comfortable living in Chicago this summer as in any other large city in the country at but little if any more cost.

As to the charges at the restaurants in the Exposition grounds, the Exposition management has required that all bills of fare and accompanying prices be submitted to a committee appointed for the purpose, and these prices are regulated in accordance with prices at restaurants of corresponding degree in the center of the city. There may be a slight increase, but this little increase visitors will willingly pay, when they appreciate the fact that one-quarter of the gross receipts of the restaurants go into the Exposition treasury toward making the great undertaking a financial success.

The cry of extortion is a false one so far as present conditions and future prospects are concerned, and should not deter one person from visiting the Exposition, which is the greatest industrial achievement in the history of the United States.

ONE HUNDRED AND TWELVE AND ONE HALF MILES PER HOUR.

Sixty years ago, when the steam engine began its competition with the stage coach as a means of passenger transit, its velocity was naturally a matter of wonder and comment. We read in the books of that period of the great speed of fifteen or even twenty miles an hour being attained by the locomotive. Under the conditions of the day such a speed was no trifle. The loosely coupled cars, with inefficient springs, rattled along over the imperfect rails and roadbed. The engine filled the air with sparks and cinders, which drifted into the cars and made life miserable for the passengers. The rails on which the cars moved were made of wooden beams, along which strips of iron were spiked. Sometimes the end of one of these strips became loosened, and bending upward over the wheel into "snake heads," would be driven through the floor of the car into the body of some unfortunate passenger, with fatal result.

The contrast between the old and the new was vividly brought out in the exhibit prepared by the New York Central Railroad for the World's Columbian Exposition. In our issue of last week we showed the two extremes of railroad engineering in the State of New York. The De Witt Clinton of 1831 stands alongside of the New York Central engine No. 999 of 1893—the pygmy beside the giant. The great dimensions of engine 999 were not all that entitled it to respect.

The engine drawing a regular train of cars on the track of the New York Central road has surpassed the speed of any object propelled by man short of a projectile. The speed of the wind in the most powerful gales has been equaled, and the flight of the swiftest bird through the air has been surpassed. The mile record for a locomotive engine on Tuesday, May 9, was reduced by it to 35 seconds. With grim humor the engineer said of the machine, she was not feeling her best, although she gave a new world's record. On May 10, between the cities of Batavia and Buffalo, a

new speed test was made. Batavia was passed at a speed of sixty miles an hour. This was increased until a mile was run in thirty-five seconds, and soon after a mile was made in thirty-two seconds. For some distance a rate almost as great was maintained.

This speed, subjected to analysis, reveals the greatness of the achievement. In every second of its progress the engine covered a distance of 165 feet. This is the velocity which a body falling in a vacuum would acquire in a fall of 425 feet. In other words, if the engine could have had its course deflected to a vertical one, without loss of velocity, it would have been thrown to this height. A man at his best can run at a speed of 30 feet per second for a few seconds at a time. His best long jump is about 23 feet. With a train running at the velocity of 165 feet, it seems as if the old stories of trains jumping chasms or running over bridges too weak to support them might be realized.

There are certain landmarks set for speed achievements by our imaginations. The "even time" of ten seconds for one hundred yards has been surpassed by a running man. The bicyclist it is claimed has surpassed his "even time" of a mile in two minutes, and aided by ball bearings and pneumatic tires the trotting horse drawing a sulky is approaching the same figures. The carrier pigeon with only aerial friction to contend against approaches a speed of a mile in one minute. The running horse may yet reach the record of a mile in a minute and a half. Engine 999 has already established her goal. It is a mile in thirty seconds, and it is believed that she will soon reach it.

The achievement means a great deal. The advocates of flying machines speak of a possible speed of sixty or perhaps a hundred miles an hour. Recent experiments with direct-gear electric motors have indicated the possibility of a speed of one hundred and twenty miles an hour. Atmospheric resistance at this rate begins to be taken into account as an important factor.

Geo. Westinghouse, Jr., a recognized authority on the subject, has shown the difficulties in bringing fast trains to a stop and in reducing their speed on emergencies. His communication was reprinted in our issue of October 8, 1892. He depicts the many troubles to be encountered in running trains at the rate of ninety miles an hour. In the face of all this the great engine of the Columbian Exposition, while still new, while drawing a regular passenger train, and without any special preparation, runs at the rate of 112½ miles an hour. It is a striking instance of theory and practice brought face to face.

THE ELECTRIC RAILWAY TROLLEY.

Another broad patent for a gigantic monopoly has recently been issued by the Patent Office. This is a patent for the invention of the late Chas. J. Van Depoele, who was a well known electrician. The patent was applied for in 1887, but other inventors claimed substantially the same thing at the same time, which led to the taking of evidence from the several claimants to determine who was the original and first inventor. These proceedings, termed interference proceedings, have recently been brought to a close, and the Patent Office awards the patent to the administrator of Dr. Van Depoele, the inventor himself having passed away. The patent has been purchased by the Thomson-Houston Electric Co., and if its validity is sustained, of which there is at present no reason to doubt, the above company will enjoy a far-reaching monopoly, covering substantially all the electric railways in the country and the plants therewith connected. Over six thousand miles of these railways are now in operation and they are being extended rapidly in all directions. This monopoly has seventeen years to run. It is probably of greater importance to the public and of more value to its owners than the telephone invention.

The claims of the Van Depoele patent are very broad and comprehensive. The principal claims are as follows:

The combination of a car, an overhead conductor above the car, an upwardly extending and laterally movable arm carried by the car and having its upper end free, and a contact device carried by the arm at its free end, and making underneath contact with the conductor.

The combination of a car, an overhead conductor above the car, a contact device making underneath contact with the conductor, and an arm on the car movable on both a vertical and a transverse axis and carrying the contact device.

In an electric railway the combination of a car, a conductor suspended above the line of travel of the car, a rearwardly extending arm pivotally supported on top of the car so as to swing laterally and provided at its outer end with a contact device engaging the under side of the suspended conductor, and a tension spring for maintaining an upward pressure contact with the conductor, substantially as described.

OVER one thousand steamships are traversing the four great ocean routes.