

SAID Nikola Tesla, in a recent New York interview: "I look forward with absolute confidence to sending messages through the earth without any wires. I have also great hopes of transmitting electric force in the same way without waste. Concerning the transmission of messages through the earth, I have no hesitation in predicting success. I must first ascertain exactly how many vibrations to the second are caused by disturbing the mass of electricity which the earth contains. My machine for transmitting must vibrate as often to put itself in accord with the electricity in the earth."

New engines on first being started are frequently injured by the cutting of the cylinders and the valve seats. The surfaces of these important organs, which ought to be perfectly smooth and true, are frequently scratched or scored at the very outset, and damaged more than they would be by a long period of hard service. Often the engine driver is charged with neglecting the lubrication of the valves and cylinders, while sometimes it is claimed that the oil introduced into the cylinders is of inferior quality, and the surfaces are not properly lubricated. A writer in the *Engineering Record* says that in a large majority of cases where these injuries have taken place, it is most reasonable to attribute them simply to the action of grit and foreign matter which finds its way into the cylinders, and its presence is due to the fact that the steam pipes and cylinders have not been properly cleaned and blown out previous to the first starting of the engine. Foreign matter is present in the pipes and cylinders during the process of installation, and unless removed is liable to do injury, and no one should start an engine without making some effort at least to clean out the pipes, and take steps to prevent injurious action of this kind. It is generally thought sufficient to blow the pipes out for a period of only a few minutes, but it would be well if a considerable current of steam were allowed to pass through for several hours' time. If this were done, not only for the piping, but also for the passages in the cylinder leading to the steam ports, there would be fewer cases of cylinders being cut and valve surfaces scored on new engines.

#### INTERNATIONAL ASSOCIATION OF FIRE ENGINEERS.

The twenty-second annual convention of the National (now International) Association of Fire Engineers took place in Montreal on August 14th to 17th, inclusive, and from the number of delegates attending and the many entertainments enjoyed, must be voted a great success. Besides the delegates, of whom there were about 450, there were present in Montreal many of their wives and daughters, who seemed to enjoy their outing fully as well as the delegates themselves. The majority of those present were American fire chiefs, some of whom had come from the far South and the far West, but there was also a sprinkling of delegates from our own Provinces.

The proceedings opened on Tuesday, at the Windsor Hall, with addresses of welcome from the Lieutenant-Governor of Quebec Province and the Mayor of Montreal. Colonel Stevenson, chairman of the Montreal Fire Committee, who was the energetic organizer of the programme for the delegates' entertainment, read a letter from the Governor-General, Lord Aberdeen, regretting his inability to be present at any of the meetings, owing to prior engagements.

The Hon. J. A. Chapleau then delivered his address of welcome. He was sorry to have been chosen to open the fire. However, on looking at Colonel Stevenson and veterans like Mr. Perry, he felt some of the old fire returning to his veins. He paid a glowing tribute to the noble calling and heroic devotion of the firemen, and proposed for them the motto of the gallant Francis I, whose shield bore a salamander with the words. "I live in it and kill it." After enlarging on the glory due the modern fireman, and the difficulties and dangers constantly and unflinchingly faced in the performance of a fire fighter's

arduous duties, he went on in eloquent language to speak of the pleasure afforded him by the sight of the mingled Union Jack and Stars and Stripes, a combination which was representative of the mutual feelings of the two great branches of the Anglo-Saxon family, and one which ought to hold always, and doubtlessly would do so more and more as time went on.

Mayor Villeneuve's address was as follows:

"We have pleasantly and constantly looked towards your visit, proud to know that your noble organization was doing us the honor to hold your twenty-second annual convention in our city, and happy to meet brave men, distinguished for their ability, intelligence and devotedness to the interests of their fellow-citizens. We considered that you came not as strangers among strangers, as you were personal acquaintances and warm friends of the heads of our fire department, and I feel confident that the admiration previously based by our citizens on your reputation will be deepened by personal contact into sincere and strong attachment.

"I therefore welcome you most heartily to our city and all the more so because you have done the correct thing in bringing along with you your wives and daughters. I fully realize the devotion, abnegation and self-denial of a fireman's wife, and it is only right that she should partake of her husband's rejoicings as well as of his sufferings.

"For one and all we will endeavor to make your stay in Montreal as agreeable as possible, and we hope that you will take home pleasant memories of our city and our people. I also sincerely trust that your convention will be fruitful, and that it will result in doing good to yourselves as a body and to the different departments you represent. You may rest assured that on our side we appreciate fully the honor you have done our city in selecting it as the scene of the present convention, and that whatever destiny may have in store for you, the good wishes of the people of Montreal will always accompany you."

Chief Humphreys, of Pittsburg, Penn., in reply, said they all felt that they were not strangers in this country. They felt a homogeneous spirit which begot warm and kindly feelings. It might be Ald. Stevenson's ulterior purpose to make them all subjects of the Dominion of Canada. His method seemed to be to win them by the process of friendly absorption. But they were here as representatives of fire departments, and their efforts while here would be directed towards improving those departments.

The police band in attendance here struck up with "Yankee Doodle," a compliment which, as may be imagined, was acknowledged with enthusiastic applause.

After brief speeches by Chief Taylor of Richmond, Ex-Chief Damrell, and Supt. Abbott, both of Boston, the opening session came to an end.

At the afternoon meeting the first business transacted was the presentation and acceptance of the report of the Committee on Credentials. A committee of five on "Exhibits" was appointed.

The next matter discussed was the disgraceful behavior of one of the association's members during the morning and on the journey to Montreal. The members of the convention were one and all indignant at his conduct, especially as it tended to cast discredit on their whole organization, and it was decided to have him brought before the convention for a reprimand. The matter, however, afterwards dropped.

Several communications bidding success to the convention were read from absent members of the association, and then the business proper of the convention commenced.

A paper by W. Paul Gerhard, C.E., New York, on "Theatre Fire Catastrophies," was read. The author gave, in a very exhaustive manner, the statistics relating to the many terrible fires which have occurred in theatres, from which it appears that during the hundred years preceding 1882 theatres to the number of 536 had suffered severely or been totally destroyed by fire. Since that date many other catastrophies had taken place with terrible destruction of human life. In four fires, between 1880 and 1890, over 1,600 persons were killed. The average duration of an American theatre was about twelve or thirteen years, a large proportion being destroyed before the end of the fifth year after construction. Perhaps the majority of fires in theatres were caused by the careless use of lights, fireworks, etc., during the performance. Since a panic was oftentimes worse than the fire itself, it was very essential in the construction of theatres to provide a large number of exits, all plainly marked as such. But probably the only safe method was, in addition to rendering the building fireproof and providing ample means of exit, to institute a thoroughly reliable system of watching and inspection.

In the evening many of the delegates paid a visit to the Sham-