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## IMPROVEMENT IN THE VENTILATION OF RAILWAY TUNNELS.

The earlier forms of railway tunnels were built without much reference to the comfort of passengers in respect to ventilation, but the increase of travel, the competition of rival lines, and the demands of an intelligent spirit of improvement have caused renewed attention to be given to the subject. The city of London is traversed in all directions by underground railways, which by their celerity, safety and reliability have become established, in popular favor, as the best means for local travel. Without encumbering any portion of the street surfaces, without creating noise or nuisance to inhabitants along their lines, they afford the most extensive facilities for rapid transit. On a recent holiday in London, the enormous number of 250,000 persons were, it is said, conveyed over the London Underground Railway, and this without taxing the road to the limits of its capacity. The rapidity with which the trains move is something astonishing. The stations are about half a mile apart, and each train, composed of ten or twelve short cars, is equal in length to five or six of the long sixty-seat American cars. During the busy portions of the day, the trains pass each way every two minutes, and it is within this brief space of time that a train starts from one station, moves to the next station, and then discharges and takes up passengers. The Underground Railways of London are composed of many short sections of tunnels, with open spaces between. When the tunnels were built—some ten years ago—but little care was bestowed upon their air supply. The increase of traffic has, however, rendered it desirable to adopt special means to promote ventilation. This has been done at several points by the erection of air shafts at the sidings and stations.

Probably the finest, as it is the latest, example of underground railway construction is that of the Harlem Railway on Fourth Avenue in this city. This great work was fully illustrated and described in our paper last year. The ventilation of the tunneled portions of this road is effected by large openings, made at intervals through the roof of the central tunnel into the street above. The ventilation is fair and gives much satisfaction.

But a still more effective method is that in which the ventilation is done by mechanical means. The tunnel being nothing more or less than a walled chamber, it is only necessary to apply a fan, in a suitable manner, and the entire

air contents of the tunnel may be unerringly changed, every minute, or less frequently, as may be desired.

The well known railway tunnel of the London and North-western Railway, under the city of Liverpool, is now ventilated by means of a single steam fan of large dimensions, placed near the center. This mechanism changes the entire contents of the tunnel in about eight minutes. Such a ventilation gives a purer atmosphere than that enjoyed by the majority of people within the apartments of their homes or places of business.

Our excellent cotemporary *Engineering* gave an estimate not long ago, showing that the underground railway tunnels of London might be mechanically ventilated, by taking the air from them at or near the several stations, by engines of three horse power, at a fuel cost of only about six to eight cents per mile per hour, the air being changed hourly.

The improvement we herewith illustrate is intended for the same general purpose, and is the invention of Mr. Joseph Dixon, of the Broadway Underground Railway of this city. Patented May 25th, 1875. The invention consists in the combination of one or more partitioning doors and a blowing apparatus, with the tunnel. As shown in our engraving, the blowing apparatus, operated by steam, is seen in a chamber at the right of the tunnels. The blower communicates by a horizontal air pipe, shown in dotted lines, with the roofs of the tunnels; and when the tunnel doors are closed and the blower set in motion, there will be a strong exhaust or outflow of air from the tunnels through the blower, which discharges into an adjoining chimney, the fresh air entering at the opposite ends of the tunnels, which are always open. The blowers may be used to force fresh air into the tunnels, if desired.

This method will at once commend itself by its simplicity, effectiveness, and economy. The plans of the inventor include the opening and closing of the tunnel doors automatically by the movement of the cars, by means of a simple arrangement of levers. For further information, address the patentee, Joseph Dixon, 263 Broadway, New York.

### Lady Jane Franklin.

The fact of Lady Franklin's illness has been known for a considerable period, so that the news of her death, which occurred on the 18th of July, is not unexpected.

Sir John Franklin sailed in search of the northwest pas-

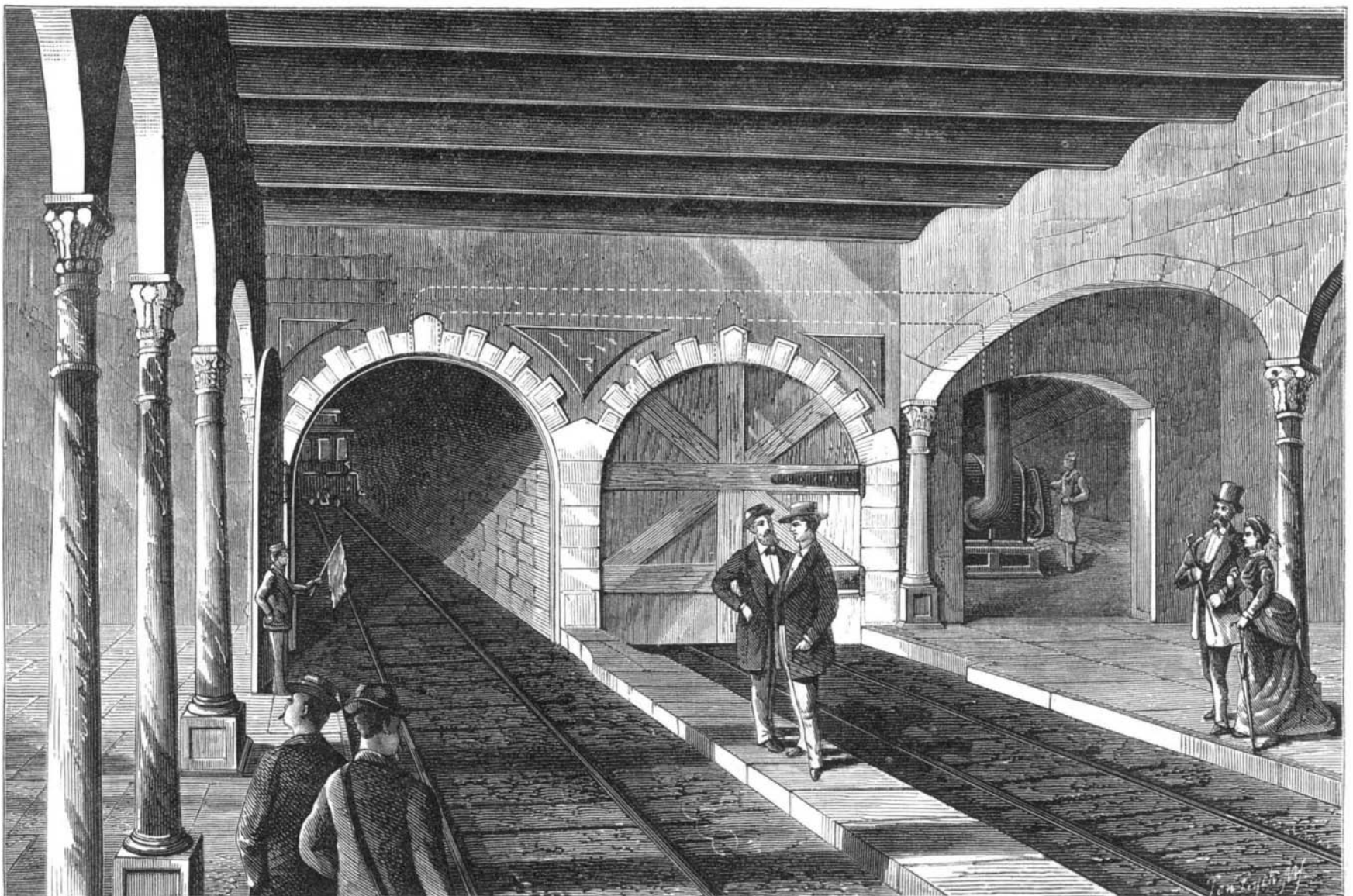
sage in May, 1845, with a small and poorly equipped expedition composed of the ships *Erebus* and *Terror*. In 1847, no tidings of the party having reached England, Lady Franklin began that series of heroic efforts at first to rescue her husband, and subsequently, after his fate had become known, to regain his remains or the records of his labors which she always believed he had left behind him. In 1848, she offered rewards of \$10,000 and \$15,000 to any persons who would carry relief to the missing explorers or attempt so to do. In 1849, she sent, through the President of the United States, a touching appeal to the American people for aid in her search. The Grinnell expedition was the response. In the following year, and subsequently, Lady Franklin fitted out numerous expeditions at her own cost, all of which, however, proved unsuccessful. In 1857, the steamer *Fox*, under the command of Captain Leopold McClintock, was despatched by her, and this vessel, after three years' sojourn in the arctic regions, returned with the first definite news of Sir John Franklin's death and of the abandonment of the *Erebus* and *Terror*.

The reception of this sad intelligence in no wise abated the interest felt by Lady Franklin in all matters concerning arctic expeditions. She still sought further tidings of her husband's expedition, and offered liberal rewards for the same. In 1870, although at the advanced age of sixty-five years, she came to this country in order to converse with Captain Hall, previous to that explorer's departure on the *Polaris* voyage.

Three years ago Lady Franklin purchased a mansion in England for the reception of the relics of Sir John's party. No one was more engrossed than she in the objects of the expedition which has just left England, and before its sailing she again offered rewards for the discovery of the last message which she was certain her husband had written her, and deposited in some place of safety.

Some three weeks ago, Lady Franklin sent by telegraph a request to the Christian people of this country, that they would remember her in their prayers on the following Sunday. The knowledge that her appeal met with an earnest and hearty compliance probably mitigated the last sufferings of one whose whole life will pass into history as a model of pure and wifely devotion.

COAL ashes, sifted very finely, thoroughly ground, and mixed with oil, make a good cheap paint. Any coloring matter may be added.



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