

in responding to the toast to his health, that he felt, very often, like throwing up the task. As you know a very extensive power plant had to be maintained.

Mr. Hall's paper is a very interesting one, and is a good description of the plant, etc. I have a little data here which, if I am not taking too much time, I would read supplementary to Mr. Hall's paper. I think it will be interesting to steam railway and mechanical men, especially. The data has been prepared by Mr. H. L. Kirker, Resident Engineer of the Westinghouse Co.

Electrification has increased the capacity of the St. Clair Tunnel fully thirty per cent., it has removed a serious handicap from the passenger service and reduced the operating expenses.

The electric locomotives handle 1,000 ton trains where the steam locomotives handled 700 ton trains. The electric locomotives climb the 2% grades with these trains at 10 miles per hour, where the steam locomotives were barely able to pull out at 3 miles per hour. Under electric conditions the average time from summit to summit is 10 minutes and the average number of cars per train is 27.3, and this number can be increased. Under steam conditions the average time from summit to summit was 15 minutes, and the average number of cars per train was 19.7. During the first 24 hours of continuous electric service 1,529 freight cars and the usual number of passenger trains were put through the tunnel. This was done without any attempt to establish a record. The record under steam conditions (exclusive of one for which extraordinary preparations were made) was 1,501 freight cars and the usual number of passenger trains. The average number of freight cars per day in January 1908 (steam service) was 937, the average in February was 682, in March 923. The low average in February was due mainly to snow blockades resulting from the eleven blizzards that occurred during that month. During the first half of March the business that offered exceeded the capacity of the tunnel. Just after the middle of March an 18 hour per day electric service was instituted. The first time the service was carried through 24 hours (March 23), the result indicated above was obtained. For several years past the business offered during the season of closed lake navigation has at times exceeded the capacity of the tunnel. With the electric service the capacity of the tunnel exceeds the capacity of the terminals. A run can be made through the tunnel every fifteen minutes. Assuming 70 per cent. of these runs to be freight and the average number of cars per train to be thirty, the total is 2,016 freight cars per day, which is more than 30 per cent. greater than was the steam capacity of the tunnel.

The electric locomotives have transformed the atmospheric conditions of the tunnel. The air has been cleared of the