

Conclusions of Congress.

As regards lighting, the Congress notes the development of the use of incandescent mantles, heated by oil-gas, and sometimes by common gas, and of different systems of electric lighting. Cylindrical mantles seem to be stronger than globe mantles, but the latter distribute the light somewhat better. Various types of mantles are used in Europe by different managements, especially in France and Germany, and are beginning to extend to the United States. Systems of electric lighting are giving satisfaction on different roads. Attention is called to the advantage of this latter system in certain cases such as for intermittent lighting when passing through tunnels and operating fans. Acetylene gas has been much used mixed with Pintsch gas, especially in France and Germany, but a tendency is observed to abandon this mixture, owing to the use of mantles. On the other hand, mention is made of the use in America of pure, compressed acetylene, with some special precautions.

Steam heating has a tendency to extend in different countries. To obtain sufficient heat for very long trains, or in cases of very low temperature, care is taken either to use pipes of sufficient diameter, or to use compressed air mixed with steam. The adoption of a uniform coupling for all the cars in the same territory is an important question to be solved.

The Congress notes the different systems of car-ventilation that have been applied, especially that in use on the Pennsylvania Railroad.

Notes.

Lighting.—In America the use of oil-gas is being largely extended, some 26,000 cars being fitted with this light. Electric light is also in use on a large scale. The following five different systems are in use for generating electric light: (1) By the use of movable storage batteries; (2) by the use of storage batteries placed permanently under the cars and charged during stops of the latter; (3) by dynamos operated by the motion of the car axle; (4) by the use of a dynamo placed in a bogie car; and (5) by means of a steam-turbine driving a dynamo placed on the locomotive.

Acetylene lighting is used in the following three forms, but not extensively: (1) With acetylene-generators hung under the cars; (2) with receivers holding compressed acetylene; and (3) with acetylene dissolved in acetone in cylinders containing some absorbent material, such as discs of asbestos.

In Great Britain and Ireland the tendency is in favour of the electric light, Stone's axle light being generally used. Oil-gas is also used to a considerable extent, but it is not enriched by the addition of acetylene.

On the Continent oil-gas lighting (Pintsch's system) is largely in use; a considerable number of cars are also fitted with the axle light.

Passing through America I took special notice of the different systems of lighting, especially the use of compressed acetylene gas. The light was the most brilliant that I saw. Electric lighting—axle light—was also good. So also was electric lighting generated by means of a dynamo located in the baggage-car. The dynamo was worked by a turbine drawing steam from the locomotive. A special man was in charge of the dynamo, which I should imagine meant a very expensive light. For hot climates there can be no doubt as to which is the most suitable—viz., electric lighting—as the amount of heat given out is very small, and the power can also be utilised for driving fans for cooling purposes.

When in London I interviewed the Pintsch-gas people, and discussed the question of using mantles on the lamps supplied to the New Zealand railways, and was advised that there would be no difficulty and but small expense incurred in adapting the lamps to use the mantles. This is important, because recent improvements in the manufacture of mantles have resulted in the production of a mantle which has been found to satisfactorily stand the vibrations incidental to railway-car lighting. On the Continent, where very many thousands of lamps are in use, mantles are now being largely used, and the various railway companies are converting their lamps so as to use mantles. The Pintsch Gas Company claim a saving of at least 25 per cent. in the consumption of gas, and a much superior light where the mantle is used. This result can also be accomplished without the aid of an enriching gas such as acetylene.

Heating.—Heating by steam obtained from the locomotive boiler is now almost universal, and gives general satisfaction. The old-fashioned foot-warmer is not much in evidence. In America the cars as a rule are overheated, and during my trip through that country I had some unpleasant experiences. Great care is taken to heat up trains prior to the locomotive coupling on to the train. This is done by obtaining steam from the stationary boilers at the station from which the train starts. In New Zealand it would be difficult to heat trains by steam, owing to the mixed nature of the services. Piping horse-boxes and roadside vans would be necessary, and in many cases the locomotive boilers are not capable of supplying the steam that would be necessary. It is, however, a matter which should have special consideration, and possibly a few trials made.

Ventilation.—The best system in use is undoubtedly that adopted by the Pennsylvania Railroad Company, America. On the Continent I did not note anything special. In England exhaust ventilators are used, but there appeared to be no special provision for the ingress of fresh air. The ventilation of the modern New Zealand cars compares favourably with other systems which have come under my notice, with the exception of that in use on the Pennsylvania Railroad.

10. AUTOMATIC BLOCK SYSTEM.

What are the recent improvements in automatic block-signalling apparatus, and what progress has been made in their introduction?

Reporters.—America—Mr. C. H. Beatt, Ex-General Superintendent, Western District, New York, New Haven, and Hartford Railroad; other countries—Mr. Margot, Engineer-assistant to the Management of the Paris, Lyons, and Mediterranean Railway Company.