

## A Review of the Year in the Electrical Industry

standardized steel enameled dome reflectors developed as the result of co-operative studies by lamp and reflector manufacturers. Numerous new fixtures for semi-indirect lighting have also been introduced.

Among important developments in lighting practice were the revision of the factory lighting codes of the Illuminating Engineering Society and of the states of Pennsylvania, New Jersey and Wisconsin, also the introduction of such codes in Ohio and New York.

An important report on automobile headlights was drawn up by a committee of the Illuminating Engineering Society and more attention is being given to this subject. Space does not permit dwelling on other interesting developments in lighting. The evidences are at hand, however, that a revival of general interest in illumination is in store, the war having in effect materially enhanced its importance. The good work commenced will undoubtedly be continued.

### Developments in Electric Transportation

**A**LL progress in electrification of railroads, extensions to existing systems, or the purchase of additional equipment has been subservient to the war. Improved methods and additional undertakings have, therefore, occurred only where absolutely necessary. In many, perhaps most, cases, needed work of rehabilitation and maintenance has been held up on account of the labor shortage and the high price and difficulties of obtaining materials. As soon as money, men and materials become available and more stable, then electrical transportation will go ahead.

#### RAILROAD ELECTRIFICATION.

The electrification of railroads has almost stood still. Only two undertakings of any magnitude have been prosecuted. One of these was the electrification of 218 miles of track of the Chicago Milwaukee & St. Paul Railroad, the other the construction and electrification of Mount Royal tunnel to permit the Canadian Northern Railroad to enter the heart of the city of Montreal.

When the 218 miles of the C. M. & St. P. railroad from Orthello to Seattle and Taco is completed, this should be in service by next summer, this railroad will have 660 miles of track electrified, 440 miles now being in operation. The 218 miles now in process of electrification will be supplied by 8 substations an average of 28 miles apart. These will be equipped with synchronous-motor direct-current generator sets, two or three units as the case may be, of 1000, 2000 and 2500 kv.-a. capacity. The Washington Water Power Co. will supply the railroad from Long Lake over a 110,000-volt, 170 mile line. The Puget Sound Traction, Light & Power Co. is also furnishing energy at 110,000 volts through an outdoor substation of 4500 kv.-a. Fifteen electric locomotives are on order, ten from the Westinghouse for passenger and freight haulage, and five from the General Electric for passenger haulage.

The Mount Royal electrification for the Canadian Northern Railroad, now owned by the Canadian Gov-

ernment, consists of 3.1 miles of double-track tunnel using the catenary system carrying 2400 volts direct current. Power is supplied from a substation contain-



ing 3 synchronous-motor generator sets, each motor driving two generators of 1200 volts and 750 kw. The motors operate at 11,000 volts, 63 cycles, with power supplied by the Montreal Light, Heat & Power Co. Six locomotives are used, each with a one-hour rating of 1280 hp. and continuous rating of 1090 hp.

Although little has been done in the way of electrification, much consideration has been given the matter, especially in view of the possibility of Government ownership and the pressure that is being brought to bear to utilize water power and save coal. Meanwhile the performance of the Chicago, Milwaukee & St. Paul Railroad and its increased mileage of electrified track is setting an example of what could be accomplished. Of railroad electrification in the near future, a number of projects are held in abeyance awaiting definite action of the Government as to a railroad policy, and for an easier money market, better labor conditions and cheaper and more plentiful materials. The electrification of the Illinois Central has been definitely decided upon, to take place progressively during the next five, ten and fifteen years.

#### ELECTRIC RAILWAYS, TRUCKS AND TRACTORS.

Street railway and interurban railways have had rather a difficult time. Rehabilitation and improvement of their systems have been cut to a minimum, and many roads are now waiting for lower materials costs and easier labor conditions to make badly needed improvements to their systems. The greatest if not only activity in street railways has consisted in the construction of spurs and extensions to plants producing munitions and similar cases where an increased number of passengers have had to be transported.

Congested railroads and terminals, and the rapidity with which motor transports took to the use of the highways for the haulage of enormous amounts of