

The Year in Heavy Electric Traction

Insofar as new installations in the electrification of steam railroads are concerned, the year 1916 has been somewhat barren of results. In Europe, it is true, there has been the adoption of single-phase electric power for the Swiss Federal Railways and the electrification with high-tension direct current on a freight line of the North Eastern Railway in England, as well as a rather "dinky" suburban line out of Manchester. On this continent we have had only the placing in service of the third engine division of the epoch-making Chicago, Milwaukee & St. Paul installation over the Rockies, the interest in which, however, has been largely discounted by the great extent of the work that was done on this project in 1915.

The year, nevertheless, has been exceptionally productive in the way of operating experience. On the two spectacular installations of 1915—the Norfolk & Western and the Chicago, Milwaukee & St. Paul electrifications—the results have been extraordinary in their success. This has been due, obviously, to the fact that both lines undertook, for the first time in the history of electrification, to handle freight on a large scale. The dominant feature of both has been the displacement of somewhat more than three steam locomotives by each electric machine. In both cases train loads have been increased very materially, and train speeds have been practically doubled.

Here we have, at last, something definite upon which to base conclusions as to the future of electric operation of trunk line railroads, and every conclusion that can be drawn points to a great extension of electrified track within the near future. At the present time a great number of projects and rumors of projects are in evidence, and it is unquestionably the fact that much of the electrification work now being considered as a possibility has been due directly to the records made available during the past year.

Of the definite new projects the two most ambitious are that of the New York Central, including the west-side tracks in New York City, and that of the Illinois

Central, including its lake front terminal in Chicago. Neither one offers anything in route mileage that approaches the Milwaukee's electrification across the Rockies, but at that both will be remarkable for the density of the traffic that will have to be handled. In addition it is practically a foregone conclusion that the New York Central's electrification, which will involve handling all the road's heavy freight trains over some thirty miles of the main line, will end in the extension of the electric zone to Albany, about 100 miles farther north. On this division the traffic is so dense and so continuous that it is actually feasible to use 1200-volt current. At present trains of great length are being handled by steam in remarkable time, the entire division being on the flat grade of the Hudson River, and this serves to cut down the margin between the effectiveness of steam and electric motive power. Nevertheless, there is a good possibility of the service being electrified solely on the grounds of operating economy.

Other than this, the projects now in the air are generally those which involve heavy grades, where the electric locomotive has the special advantages of unlimited power and superior tractive efficiency, both tending toward the establishment on the mountain divisions of train loads that are equal to the tonnages handled on level divisions as well as to the maintenance of reasonably high train speeds. On mountain divisions also the element of regenerative braking affords another advantage to the electric locomotive, the year's experience having shown that this method of handling trains is thoroughly practical from an operating standpoint, although as yet no basis is available for estimating the extent to which it increases maintenance costs.

In conclusion it may, perhaps, be said that the past year has been one of watchful waiting in electrification. The outlook for 1917 is more than promising as regards new projects, mainly for the reason that many doubts on the ability of electric traction to produce results have been set at rest through the record of definite accomplishment.

How Earnings Have Held Up

Just as in periods of panic or depression one finds in electric railway and other utility earnings a marked stability, so in the days of rapidly expanding prosperity one does not expect to find utility earnings so inflated as those of many other companies, particularly industrials. For this reason, the unparalleled earnings records that were made by many manufacturers in the United States during 1916 had no counterpart in the electric railway industry during this period, although appreciable advances appear to have been made in the latter field. Electric railways as a whole are still far from being inclined toward prompt co-operation in the matter of furnishing earnings statistics, but from figures thus far obtained by the information bureau of the American Electric Railway Association it may be

possible to give some indication of the trend of their earnings.

For the fiscal year ended June 30, 1916, as compared to the similar preceding period, the operating revenues for about 8700 miles of line out of approximately 30,000 miles showed an increase in gross operating revenues of 3.47 per cent, in operating expenses 2.40 per cent, and in net operating revenues 5.15 per cent. During the first six months of the calendar year 1916, as compared to 1915, this showing seemed much improved, for companies operating about 7450 miles of line increased their gross operating revenues 8.08 per cent, and their net operating revenues 12.10 per cent, operating expenses rising 5.68 per cent. To bring the record as far as possible up to date, the results for the first nine