

# GENERAL ELECTRIC REVIEW

NOVEMBER, 1916



A Special Number

on

Electric Traction

# GENERAL ELECTRIC REVIEW

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Manager, M. P. RICE

Editor, JOHN R. HEWETT

Associate Editor, B. M. EOF  
Assistant Editor, E. C. SANDERS

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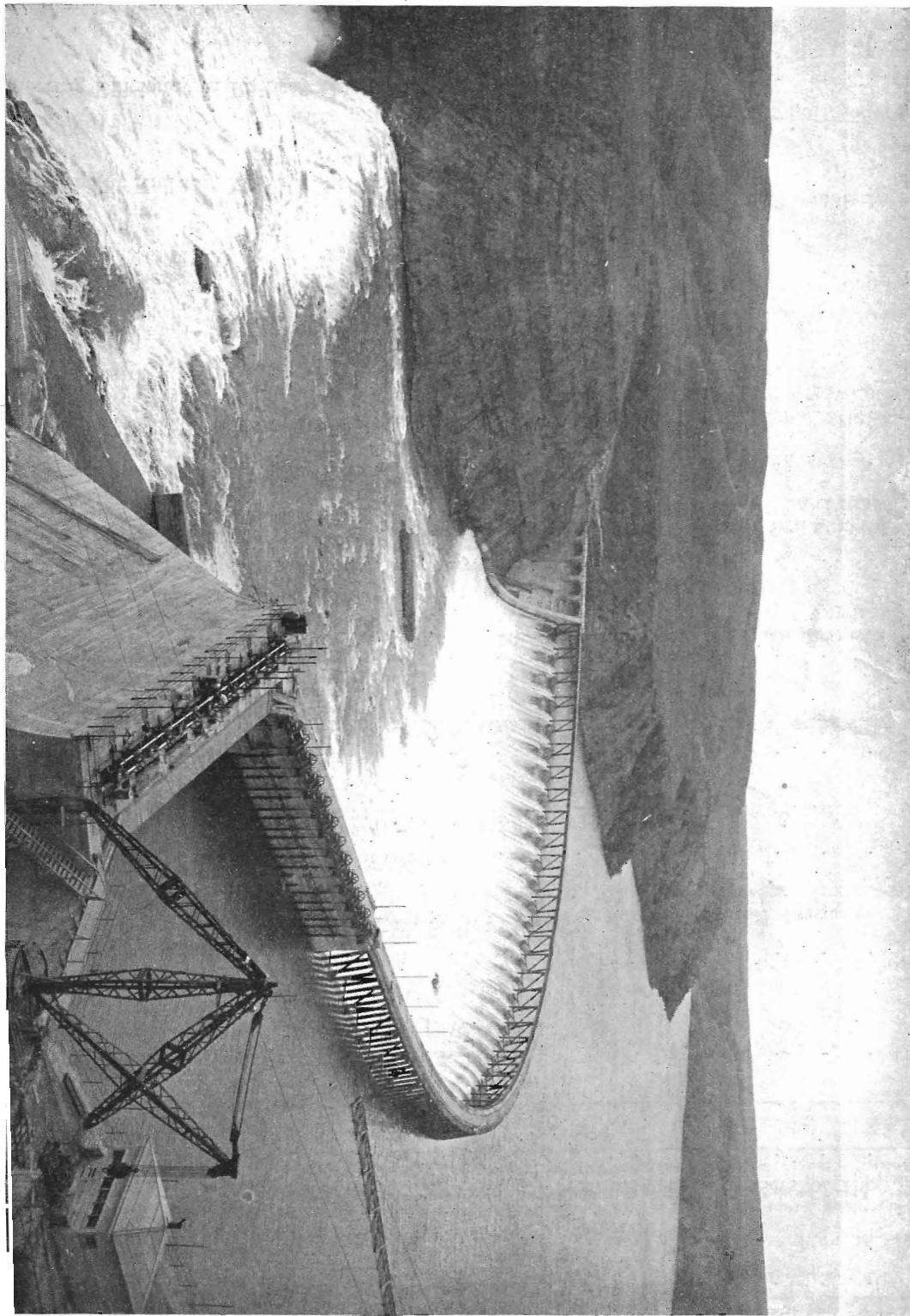
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BIRD'S-EYE VIEW OF THE GREAT FALLS DEVELOPMENT, MONTANA POWER COMPANY



# GENERAL ELECTRIC REVIEW

## THE PATHS OF PROGRESS

In our special traction issue published two years ago we printed quite a number of contributions showing the results obtained on various electrifications widely distributed throughout the country. Among these articles was one giving detailed statistics concerning the Butte, Anaconda and Pacific 2400-volt direct-current installation and showing the truly remarkable economies effected. On that occasion we ventured to predict that the technical and financial success of this undertaking would have a far reaching effect on steam road electrification in general, and in particular would point to high potential direct-current apparatus as the logical equipment for heavy and exacting railroad service. It was in our editorial for this same issue that we were able to announce that plans were maturing for the electrification of some of the most important mountain divisions of the Chicago, Milwaukee and St. Paul Railway, and that direct-current high potential apparatus would most likely be selected for this important work, and that a trolley potential of 3000 volts was contemplated.

It is today a matter of common knowledge that this selection was made and that now 226 miles of main line track are actually under complete electrical operation, and that in a few months time a total of 440 miles will be operated entirely electrically.

It is too early yet to give detailed statistics showing the financial success achieved, but Mr. C. A. Goodnow's article in this issue shows in a most striking manner the success of the whole undertaking and the wonderful operating results accomplished. Mr. Goodnow's article will be especially appreciated by the operating man who is anxious to learn wherein the advantages of electrification lie.

The physical characteristics of the divisions electrified and the successful operating results achieved can be shown in rather an interesting manner by quoting part of the first and part of the last sentence in Mr. Goodnow's article: "The electrified portion of the road crosses the Belt Mountains, reaching an elevation of 5768 feet; the Rocky Mountains at a height of 6350 feet and the Bitter Root Mountains at 4200 feet." And "I think it quite within the fact to say that the Milwaukee road has forgotten that the Continental Divide exists." This is a most elegant tribute to the capabilities of the direct-current locomotive.

We have talked about steam road electrification for a number of years, and indeed there have been some very notable installations made, especially in the direction of terminal electrifications, but it has fallen to the lot of the youngest of our transcontinental railway systems to be the pioneer in main line electrification. It is worthy of special note that the railway divisions selected for electrification are not simple level tangent tracks, but are among the most difficult divisions in the country where the steam locomotives—huge Mallet compound engines—were taxed beyond their power in handling the freight and passenger traffic. The faith that the steam railroad men put in the electric locomotive is shown by the fact that the divisions electrified comprise the heaviest character of mountain grades and curves, etc., across the great Rocky Mountain divide.

It is because the Chicago, Milwaukee and St. Paul electrification is the most notable engineering achievement scored in the country during the last two years, that we are devoting a very considerable part of this issue to describing that undertaking and publishing articles showing, in considerable detail, the apparatus used.

We feel that no one factor will stimulate steam road electrification to the same extent as the development of our hydro-electric resources by independent companies, as such developments will relieve the steam road from the heavy financial burdens incident to the building of their own power houses. For this reason, Mr. J. D. Ryan's article will be of special interest to the steam road man, as it tells of the wonderful way in which the natural resources of Montana have been, and still are being, developed by the Montana Power Company. It was this particular development that enabled the Milwaukee road to electrify its main line tracks under such favorable circumstances. Further possibilities of relieving those steam roads, which are contemplating electrification, of the heavy initial investment required for power houses and rolling stock before the economies attending such electrification can be secured are considered in Mr. W. J. Clark's article.

The general extension of the use of high potential direct-current apparatus for railroad purposes is shown in a very marked manner by the large tabulation accompanying Mr. G. H. Hill's article. A great deal of interesting data are given and will be highly instructive to all those interested in following the modern trend of electric railroading.