Synopsis: Engineering and construction features involved in a complete telephone cable system over 300 miles in length and connecting Philadelphia and Pittsburgh, Pa., are described in the following paper. This cable is designed to operate as an extension of the Boston-Washington underground cable system with which it connects at Philadelphia. It is also designed for operation in connection with the Pittsburgh-Chicago cable now under construction, and other cable projects included in a comprehensive fundamental plan.

Beginning with the fundamental factor of public requirements for communication service between cities separated by various distances, there are next considered the methods available to provide this service. Small-gage, quadged, aerial cable, which was decided upon for use in this section after careful economic studies, is described in a general way and the important advantages of the application of loading and telephone repeaters are outlined. The use, in connection with this cable, of the recently developed metallic telegraph system for cables is referred to and some facts are given regarding power plants, test boards and buildings. A few of the many possible combinations of cable and equipment facilities into complete telephone circuits, which will furnish the service required as economically as now possible, are illustrated.

The necessity of complete coordination of the many factors involved in a project of this kind is emphasized.

Introduction

The placing in service in the latter part of 1921 of the final section of a continuous telephone cable over 300 miles in length between Philadelphia and Pittsburgh marked a new point of achievement in the steady development and construction of facilities designed to render to the public the best possible long-distance telephone service. Furthermore, this cable forms an important part of a comprehensive plan of long-distance cable construction throughout that section of the United States lying in general east of the Mississippi River and north of the Ohio and Potomac Rivers.

In the discussion of a project of this kind which involves many new practices and the expenditure of several millions of dollars and which, with related work already completed, forms the groundwork for large expenditures in the future, it is usual to inquire first into the underlying reasons for carrying out the project and then into the methods adopted. In the following discussion an endeavor will therefore be made to furnish some information on these two items in their relation to the Philadelphia-Pittsburgh cable, although, as will be obvious, the many different points can be covered in only