

The great factors in any railroad location, in order of importance, are—

- (1) The aims and ideas of the promoters
- (2) The position of present and future traffic centres.
- (3) The topography of the country.
- (4) The economic advantage of adjusting roadbed and rolling stock to one another.
- (5) The requirements of modern operating practice.
- (6) Difficulties of construction.

The general route of a railroad is rarely determined by engineering considerations. The promoters of the line—be they politicians, railroad men, or speculators—have some political or financial end to attain, and to that end all other considerations will be subordinated. In Canada the completion of our great railways has marked successive stages in the political and commercial growth of the country—the Grand Trunk united the old Canadas, the Intercolonial linked them to the Maritime Provinces, and the Canadian Pacific connected the whole Dominion.

The struggles that took place over the location of these roads are matters of history, and show how clearly the public realized that the problem was of economies rather than of engineering. The history of all the minor lines that have grown up around the great lines is more or less similar, and it is hardly necessary to add that they all have been built where they were thought to be of most immediate advantage to their promoters. It has frequently happened that the route has been determined before an engineer has even been called in for consultation, and in easy country such a practice cannot be considered altogether objectionable. An engineer's training does not fit him in particular, as distinguished from other classes of railroad officials, to foresee the great economic and commercial changes that will be sure to follow the opening up of railroad communication, and at times he would be almost at a loss to choose between competitive routes, had they to be judged from an engineering standpoint only. The four lines that now connect Montreal and Ottawa furnish a good example of this point (see Figure 1); they connect termini that are about one hundred miles apart and yet are as much as fifty miles distant from each other, and their lengths vary from 112 to 125 miles; it can, however, hardly be said that the proportions of the traffic they carry