The engineer certainly cannot make this provision without some knowledge of the mechanical principles which control locomotive design and of the developments that may be expected in the immediate future. These developments are usually foreshadowed by the practice of the lines carrying the heaviest traffic, and are thoroughly discussed in the current technical press.

Engineers generally do not recognize how available the publications of that press are when systematically bound and arranged in libraries, such as that of the Can. Soc. C.E., nor how quickly any important article can be found in it with the aid of the engineering indexes now regularly issued.

In the "Economic Theory of Railroad Location," the variation of operating costs with train mileage was made the base of all calculations; and although the systematic studies now made by the audit and statistical departments show that train mile cost is not the same for trains in dissimilar service, the heavy freight traffic is of such preponderating importance to Canadian railroads that increase of train-load can be accepted as proof of improvement in operating. The following table, compiled from the statistics published by the Department of Railways and Canals, shows the results attained in the operation of the Grand Trunk Railway during the past fourteen years. The facts most worthy of note that it brings out are the recent rapid increase of tonnage handled, the decreasing freight train mileage, the unvarying number of locomotives in service, and the relative importance of the freight business; and these are shown graphically in the accompanying cut (Figure 5). Were the figures for the present year as yet compiled, they would show with much greater distinctness the features referred to, for the traffic of this spring is beyond all precedent in its magnitude.