While thus insisting upon the value of a topographical survey in its practical and commercial bearings, we must not forget that the execution of such a work has large value from a geodetic and geographic point of view which, while only of scientific interest to-day, may well be of practical importance to-morrow.

In these circumstances it is not surprising that almost all countries have recognised the paramount necessity of carrying out precise surveys of their territories. Such work is completed or in progress in the United Kingdom, British India, British South Africa, the United States and in all European countries with the exception of Turkey.

General characteristics of topographical maps.

If we examine the maps of these countries, we shall find that there is a general consensus of opinion that the military and other requirements are best met by a map, on a scale of from about 1¼ inches to ½-inch to a mile, showing all the natural features of the ground and all the artificial features, *i.e.*, roads, railroads, houses, bridges, &c. (*see* also Appendix V.).

Question of scale.

The best scale for the map depends upon the nature of the country and on the amount of building and cultivation, thus, in a closely inhabited country, the necessary details can hardly be shown on a scale of less than 1 inch to a mile, while in a more open country one of ½ inch to a mile may suffice. In unsettled or sparsely inhabited regions, where the ground forms are not complex, the features can be shown on a map at a scale of ¼ inch to a mile. This is about the limit of practical utility for a topographical map. On any smaller scale the natural features cannot be shown in detail, but can only be indicated in a generalized and approximate manner.

The selection of the most suitable scale for any particular country is largely a question of relative cost, a matter which is discussed in a later portion of this report. We may, however, here remark that in a sparsely inhabited country, such as Canada, all practical requirements, for a long period of years, can be met by a map on the scale of ½ inch to a mile. Special areas, such as those surrounding the larger towns, and mineralized localities where land values are high, might be surveyed on larger scales, but the undertaking of a general map on the 1-inch scale would be too ambitious a project at the present time.*

A topographical map of Canada on a scale of 1 inch to a mile, showing all the natural and artificial features, would meet all reasonable military requirements, and would, at the same time, be of incalculable value for administrative and engineering purposes. No such map at present exists for any portion of the Dominion.

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* A [illegible] costs from 2 to [illegible] times that of a 4-inch survey. The latter could be [illegible] at an average cost of 10 dollars per square mile. A 1-inch map would cost at least 200 dollars per square mile. For further discussion on this point, see