

With such a descent or fall as we find north of the Height of Land, the country could hardly have failed to have been well drained. The volume of water given off by the rivers is so great, especially in the spring and early summer, that the rapidity and force of the current must have excavated, in any loose material, channels several hundred feet below the general surface; and this territory would (in all probability, I think) have been naturally as well drained as most parts of the western prairies.

The depth of the glacial and post-glacial deposits on the palaeozoic plain lying to the south and west of James Bay, does not appear, however, to be very great at any point where I have had an opportunity of seeing and judging. Nowhere on the coast, from our Eastern Boundary near Rupert's river, to the Albany river, (our Western Boundary under the award of the Arbitrators) does this loose surface material appear to be more than thirty or forty feet in thickness, and in many places it is much less. It increases, however, in depth as we travel southward from the coast, and although the thickness may not exceed sixty or seventy feet on an average, it is sometimes, near the southern edge of the plain, not less than 200 feet in thickness. This latter depth would appear to be attained on the Abitibi river near New Post, and the material there is principally a drab coloured calcareous clay. In the western part of the territory the thickness of the clays, gravels and sands, as seen on the Albany and Kenogami or English rivers, is considerably less than on the eastern or Abitibi side. As the rivers crossing this flat country have already reached the underlying limestone and sandstone strata throughout the greater part of their length, the rate at which they are now wearing and deepening their channels is so slow as to be altogether unappreciable even in a lifetime. While little or nothing, therefore, can be expected from such deepening of the channels in this section, a great deal can be accomplished by the artificial drainage of the surface soil, and much land may be reclaimed even in the most northerly part of the territory. See Report for 1881-82, page 6.

In the higher central plateau the loose material rests upon Huronian and Laurentian rocks which (as already stated) rarely rise above the general surface, but cross the rivers at intervals, in the form of narrow reefs or ridges. It is at these points where the rapids and falls are met with, and where portages have to be made. Now, although there may be extensive river bottoms and a great depth of clay or sand in the intervals between these reefs, the water is so pooled or dammed back by them that the land on the banks is for the most part either wet and swampy, or liable to be flooded. Only as these reefs are worn away by the slow action of the water, can the intermediate beds of the river, however soft the material, be deepened and such lands reclaimed. These rock reefs once removed, the current in the stretches above would be so increased that the water would at once commence acting upon the soft or loose material which usually forms the bottom. Thus the channels of the rivers would be gradually deepened, and the surface of the water permanently lowered.

The effects as regards drainage would be precisely similar to those which would result if the adjacent land were raised above the general level of the rivers. Nor would the drainage of the land situated on the banks of the main rivers be the only advantage—every tributary, and even the feeders of the tributaries, would in some instances be lowered and their efficiency as drains thus greatly increased.

It is, therefore, to the destruction and removal of these reefs of rock, and in some instances of boulders only, which obstruct the flow and dam back the water of the main rivers, that the attention of the Engineer should be directed.

I have seen many, many rapids and falls in this territory, and more particularly on this central plateau, where every dollar thus expended would yield a very large return; and the time is not so remote as many think when, if the Government should be unwilling, private individuals and companies will undertake this noble work. I call it a "noble work" because if the man who plants a tree is entitled to be regarded as a benefactor of his kind, much more is he who by his enterprise, skill, labour and capital, reclaims from utter waste, thousands of acres of fertile land, which if needful, will grow whole forests of trees; or afford food for numerous families of men for generations to come.

In some instances, blasting alone is all that would be necessary in my opinion to