

This feeder is fully 21 miles in length from the town of Dunnville to its junction with the main line, (about $6\frac{1}{2}$ miles from Port Colborne), and at about 5 miles from its upper end, a branch one mile and three-quarters long, leads off to Port Maitland.

The summit level, supplied as above mentioned, extends from Allanburg to Port Colborne, a distance of nearly $14\frac{1}{2}$ miles. At the latter place there is a lock down from it of 8 feet. At the town of Welland, about $7\frac{1}{2}$ miles from Port Colborne, where the canal is carried over the river by an aqueduct, there is another lock down of about 17 feet, and at Port Robinson there is a second descent to the Welland River, of 17 feet.

These three outlets, together with that of the principal line itself, require a volume of water which the Grand River, under present arrangements, can barely supply during dry seasons.

It may be said that the canal has three different entrances on Lake Erie—one being at Port Colborne, the upper terminus of the main line; another 17 miles to the westward at Port Maitland, the mouth of the Grand River, which is connected by way of the feeder with the main canal at a point about $6\frac{1}{2}$ miles from Port Colborne; the third, 18 miles to the eastwards, is by the Niagara River to Chippawa, thence along the Welland River to Port Robinson, a place nearly midway between the lakes.

One of the most troublesome questions connected with this undertaking, from the outset up to the present time, has been the instability of the banks of what is called the "Deep Cut," an excavation formed through the highest ridge of land on the line, and near the northern end of the summit level. It is about $1\frac{1}{2}$ th miles in length, and the present line assumed for the bottom is for a considerable distance fully 60 feet under the top of the banks on either side; but the depth below the natural surface of the ground is not more than 45 feet, the upper 15 feet consisting of material excavated from the channel when it was first formed.

The extensive slides and movement of the banks that occurred on this part of the line in 1828, first led the "Welland Canal Company" to abandon their original design of drawing the water supply from the Welland River, and to resort to the plan of using the Grand River as a feeder.

By the adoption of this course it was thought that the channel would be elevated above all interruptions from the slides that had occurred, and placed beyond the risk of similar casualties for the future.

For many years this appears to have been the case, but during the enlargement of the channel to its present dimensions, and the lowering of the bottom, so as to give the proper depth of water at the level of Lake Erie, there have been slides in the banks at several places, and at various times, still none of them were of such an extent as to impede navigation on the higher level. The most recent of these were in January, 1867, and in May, 1870. At the latter time they were larger and more numerous than on any previous occasion. It is remarkable that some of them have occurred suddenly at places where no indications were before observed, and also that where a heavy slide has taken place, although the prism of the Canal has been subsequently fully cleared out, it is seldom that a slide again occurs at that place.

A circumstance which leads to the impression that when the yielding materials, which form the lower part of the cut are displaced to a sufficient depth by the tenacious clay of the sides, there is a probability that the bottom may remain undisturbed, and the subsidence of the banks cease.