

of Cote d'Abraham, and other streets, have had to be rebuilt during the writer's time, and generally after a persistence of only 10 to 20 years or less.

The splendid cut stone retaining wall along Commercial Street, Montreal, though built hardly 50 years ago, is and has been for some years back giving way, in like manner, from earth pressure in the rear; and the walls of the new Louise Docks at Quebec have already become disgracefully out of plumb and alignment from the same cause.

The impression, of course, has been in all these cases, or was at the time of construction, that the several walls mentioned, having nothing to withstand or bear up against but the pressure of so much dry earth behind them, they needed not to be of a thickness or breadth of base greater than from one-fifth to one-third their height, sometimes even less than this, and as low as one-seventh thereof, or about 3 ft. for a 20 ft. wall.

The fact was overlooked that the dry earth backing might become waterlogged by infiltration, and especially so where no weepers had been provided for the removal of wet and moisture; or even with weepers, if the filling in their proximity was of too retentive or impermeable a nature, or where, in the case of weepers or no weepers, there had not been interposed between the back filling and the rear face of the wall a narrow space filled with loose material of a stony consistence to allow water, when reaching the wall, to run to the bottom thereof and thus find its way out or expend itself by absorption into the underlying soil.

Yes, the writer has noticed in very many cases of such retaining walls and of those separating tenements on sloping ground, or lying back to back (the one at a higher, the other at a lower level; the ground embanked on the one or upper side to raise it to level of street on that side; excavated on the lower side) that the percolation into the embankment had absolutely waterlogged the filling, and thus caused it to press with the pressure of a liquid or fluid on the intervening wall, causing it to bulge or swell, and thus fall by disintegration, or to give way bodily.

Not that this waterlogging of the filling was of a permanent nature, nor need it be; but only of momentary duration, as it might produce a thrust forward of the wall, of only the fraction of an inch, thus enlarging its (the water's) containing space, and making room for itself to subside in, and gradually pass through the wall to the lower level, or evaporate or be absorbed by the subsoil. This waterlogging would, of course, be intermittent, and might recur again at every succeeding return of heavy rains, and the wall again be thrust forward, and each time by an additional fraction of an inch, and up to final destruction or overthrow of the stony structure.