GEOLOGY OF THE WESTERN DISTRICTS OF CANADA.

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eat Western f the harder by exposure of elay. he Desjardins canal, enormous quantities of material were thrown in and disappeared, producing no effect in forming a bank, but forcing up the soft material in the original bottom of the marsh, to a considerable extent and height above the surface. This affords a good illustration on a small scale, of what the geologist often finds on a large scale, and may be puzzled to account for; I refer to the displacement of strata, formed in horizontal position and thrown up into a highly inclined or even vertical position.

Waterline and Ochre.-Before noticing the superficial deposits of this region, I shall direct attention briefly to the waterlime and ochre beds of Thorold, which are somewhat extensively worked for commercial purposes, and occur about three hundred feet above the level of the Lake, and close on the line of the Welland Canal at Thorold. The waterline deposit consists of a series of thin layers (each layer not exceeding eight to ten inches thick) in all about three and a half to four feet thick, of very hard compact dark blue limestone, corresponding in position and probably identical with the Clinton group. These beds are in some places a perfect congeries of large bivalves, called *Pentamerus* oblongus, some of them measuring three and a half to four inches across, while the partings of the beds are beautiully marked with fucoids of various species. The limestone from this bed, when calcined and ground to powder, forms an hydraulic cement of the best quality; owing this peculiar property to the presence of a large proportion (over ten per cent.) of silica or silicates. Immediately underlying and overlying this bed, are thin layers of a softer stone, which, when calcined and ground, forms an excellent drab coloured pigment; a rich brown paint, said to be fireproof, is also manufactured at Thorold, from material found in the same quarries. Whether these peculiar products extend far to the cast or west of the localities where they are at present quarried, I am unable to say; but at Rochester there occurs an iron ore bed at the same place in the series, and Dr. Mack of St. Catherines has ascertained that the stone from the drab ochre bed contains forty per cent. of iron.

Superficial Deposits.— I shall now, as briefly as the subject will admit, direct your attention to the superficial deposits of this region, and the proofs of glacial action which they afford. It is now pretty generally conceded, and in fact cannot on any reasonable ground be denied, that the thick deposit of clay, sand, gravel and boulders which covers the Western districts of Canada, (in many places upwards of

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