

out of the gneiss, and sometimes out of the interstratified limestones; the general trend both of the hills and the lakes being coincident with the strike of the rocks. These, though concealed in the valleys by considerable depths of alluvial soil, are seen in the hills to be hard and undecayed. These geographical features, as I have elsewhere pointed out, were apparently determined by sub-aërial decay previous to the erosion which removed from them the softened and disintegrated portions, leaving the present outlines.*

When, after cutting the forest-growth which covers these hills of granitoid gneiss, fire is allowed to pass over the surface, destroying the undergrowth, the comparatively thin layer of soil is laid bare, and is soon washed away by the rains; leaving the bald, rocky strata exposed in a manner singularly favorable for geological study, but rendering the region sterile. To prevent this process of denudation it has become the practice in some parts of the country, after burning over the hillsides, to sow them, without loss of time, with grass-seed, which, at once taking root, protects the soil from the destructive action of rains, and transforms it into good pasture-land. This system, which has been adopted to a considerable extent in parts of Frontenac county, Ontario, is worthy of record and of imitation in other regions.

The similar apatite-bearing gneisses, which are found to the north of the river Ottawa, a little northeast of the city of that name, are in Ottawa county, Quebec, and chiefly in the townships of Buckingham, Templeton, and Portland. They reproduce all the characteristics of the first-mentioned district, and may be looked upon as a prolongation of it beneath the northwestern limb of the paleozoic basin already mentioned. Later observations, both in Ontario and in this latter district, where mining operations have been carried on within the past few years, have been recorded by Messrs. Broome and Vennor, and by Dr. Harrington,—the latter up to 1878. They have, however, added little to our knowledge of the conditions of occurrence of the mineral beyond what had already been set forth in 1863 and 1866.

I have, within the past few months, examined with some detail many of the apatite-workings in Ontario, which have served to confirm the early observations, and to give additional importance to the fact, already insisted upon in previous descriptions, that the deposits of apatite are in part bedded or interstratified in the pyroxenic rock

* See the author's paper on "Rock Decay Geologically Considered."—*Amer. Jour. Sciences*, Sept., 1883.