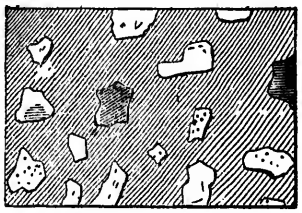
state. In some places, for example, at Marquette and Presqu'isle, they assume a spheroidal structure, as though after their deposition they had been so far operated on by heat as to allow a rëarrangement of the particles. Along the lines of volcanic action, we frequently find, throughout this district, a green pulverulent substance, somewhat resembling chlorite, and containing a large amount of magnesia and lime, which is probably in the nature of an ash. The same ingredients enter largely into the composition of many of the trappean rocks, for they possess a soapy feel, and when reduced to a powder, effervesce feebly with acids.

There are undoubtedly, at this day, beneath the bed of the ocean, numerous "salses," which, from time to time, pour forth streams of pulverulent materials, but whose operation is concealed from human sight. We know that for weeks in succession, there flowed streams of chocolate-colored mud from the crater of Graham's island, before it finally sank below the surface. The contributions from this source, to the first formed stratified deposits, have not been duly appreciated. This volcanic mud is nothing more than the comminuted particles of trappean rocks, reduced by friction; and in the early history of our planet, when the fissures communicating with the interior were unfilled and volcanic energy was manifested more intensely than at this day, it would be reasonable to expect that igneous causes contributed as powerfully to the reduction of the prëexisting rocks, as the ordinary abrading action of water. The slates are composed essentially of the same ingredients as the trappean rocks with which they are associated, and the main difference between them may be, that the one was the product of salses, ejected in the form of mud, while the other was the product of volcanoes, ejected in molten streams. It has been supposed that the talcose nature of the slates associated with the igneous rocks was the result of metamorphism, but the supposition that they have resulted in some instances from the destruction of the latter, is quite as reasonable.

About a mile from the lake shore, on the road leading to the Jackson Forge, a low range of trappean rocks, of a compact texture, and of a dark-

(Fig. 1.)



Brecciated hornblende and feldspar rock.

green color, is intersected. Between the Jackson and Marquette landings, by the lake shore, a similar belt is observed, which again appears near the junction of the roads, about four miles inland.

Another belt intersects the coast a short distance above the Marquette landing, which does not differ essentially from those before described. The