

Silica	51.00	per cent.
Alumina.....	25.90	“
Oxyds of Iron.....	12.40	“
Lime.....	9.10	“
Other substances not determined.....	1.60	“
	100.00	

As this exists in large quantities, we can now see from the above that the rocks which form these mountain slopes will, by their degradation, form a good soil as to texture when properly cultivated. But there is this very important difference in them from the soils in the middle of the valley, though they look very much alike, and are somewhat similar in texture. The soils of the valley, formed by decomposition of mica slate and shales, require some agent to effect their decomposition. They have enough of lime, and nearly enough of magnesia, but not in an isolated form. The addition, then, of a weak magnesian lime to these soils is all that they require to set free both lime and magnesia in sufficient abundance. On these mountain soils the case is different, they have a large abundance of lime, and only a trace of magnesia. They, too, require degradation, they need that their insoluble compounds shall be rendered soluble. Pure lime would effect this, but pure lime cannot supply magnesia. Limestone containing a large quantity of magnesia then should be applied to these soils, it will rapidly disintegrate them, and at the same time supply a useful and necessary constituent of the soil. Here then is a great practical difference in the composition of these soils, and they must be treated accordingly. A weak magnesian lime will most benefit the valley soils, and least the mountain slope soils; the strongest magnesian lime will most benefit the mountain slope soils, and least those in the middle of the valley. For the sources of those two varieties of lime stone, I refer to the analyses of limestones in a succeeding part of my report.

There is another characteristic of this variety of soil, which is the large quantity of phosphoric acid which it contains; therefore, there should not be applied either bone dust, Columbian or Mexican guano to it. It has a deficiency of common salt and plaster of Paris, these two should be applied according to directions given under the head of manures.

This description fairly represents all this class of soils, and the directions here given may be followed with profit by all those who may have them in cultivation.

RED LANDS.—By this name is known and recognized a peculiar variety of soils in Frederick county, extending from the