

only estimate the quantity of each, and the particular adaptation of a limestone to the soil by a quantitative chemical analysis.

The belief is very generally diffused that magnesia, instead of being a necessary constituent of a fertile soil, and an essential part of the composition of plants, injures the quality of the one, and proves detrimental to the growth of the other.

To correct this erroneous impression as far as I can, and show how far it is useful, and when it may be injurious, when it should be applied, and when withheld from a soil, I will briefly review the arguments against its use, and let the facts which I shall offer, urge its application.

Sprengle says that soils containing much of the carbonate of magnesia are said to be highly absorbent of moisture, and to this cause is ascribed the coldness of such soils. This absorbent property of magnesia, so far from being an objection to, is sometimes recommendation for its use, as we find many soils deficient in this property, being light, loose and porous,—deficient in the two great *absorbers* of food from the atmosphere, clay and the peroxide of iron, and not having a sufficiency of fine sand to effect the vicarious action of these substances. Here then, for its mechanical agency alone, magnesia is indicated, and if it had no other use, should be applied.

Chaptal says that “magnesian soils are by no means fertile,” and that whenever lime, containing magnesia, is used for agricultural purposes, it no longer produces the same effect.”

Against this sweeping declaration of the poverty of magnesian soils, no better argument can be used than that of showing the composition of some fertile soils.

Johnson, J. F. W., Lectures on the Application of Chemistry and Geology to Agriculture, p. 284, “gives a soil which had been cropped for 100 years successively, without manure or naked fallow,” containing 1.16 per cent of magnesia, equal to about 350 bushels of magnesia to the acre, to the depth of twelve inches; another containing 3.12 per cent. of magnesia, equal to about 94 bushels, “a virgin soil celebrated for its fertility;” another containing of carbonate of magnesia, 10.36 per cent., equal to about 3,100 bushels of carbonate of magnesia, which had been “unmanured for twelve years, and during the last nine, had been cropped with beans, barley, potatoes, winter barley and red clover—clover, winter barley, wheat, oats, naked fallow.”

Analyses of Sprengle, too, show very fertile soils containing—

.06	of	one	per	cent	of	carbonate	magnesia.
1.64	“	“	“	“	of	“	“
.52	“	“	“	“	of	“	“
2.22	“	“	“	“	of	“	“
.84	“	“	“	“	of	“	“
1.04	“	“	“	“	of	“	“