

stituent—the analysis of the soil, or a *series* of experiments, being alone capable of deciding, to which of these causes its non-action should be attributed.

The very great difference in the gypsum which is sold in market, I shall advert to particularly when recommending some action in regard to its inspection. It is best applied by being sown broadcast on the growing crop, on clover early in the spring, and on Indian corn just before it begins to shoot. The proper quantity is from one-half to one bushel per acre. An advantage is also derived from rolling the corn in it before planting. To compost heaps, to barn-yard and to stable manure, it should be applied every few days in quantities depending on the number of stock, one gallon at a time being enough for the largest yards or stables in the country.

This should be done whether gypsum is applicable to the soil upon which the *manure* is to be used or not, as it preserves one of the valuable constituents of the manure which would be otherwise lost.

Besides furnishing the elements to crops, which enter into its composition, gypsum is decomposed by the ammonia always present in the atmosphere, which, by uniting itself to the sulphuric acid of the gypsum, loses its volatility, that is, its tendency to escape into the air.

The application of gypsum, then, besides furnishing its own elements to crops, retains for them much valuable food from the air.

This mode of the action of gypsum has been denied by some very distinguished writers, who allege against this theory, that the increase of the substances in crops which it absorbs from the air, is far beyond what the quantity applied is capable of retaining. Those who take this ground forget that when sulphate of lime is decomposed by carbonate of ammonia, the growing crop takes up the ammonia without using the sulphuric acid, which is thus left to absorb and yield to the crop successive quantities of ammonia, as long as it remains in the soil. All chemists are familiar with similar action in the manufacture of certain chemical compounds.

It is shown from analyses that some specimens contain thirty per cent. less of gypsum than others; yet he who buys, pays the same price for it, as if it contained the full amount of gypsum. The inspection should show in this, also, not only the *weight* of the barrel, but *what is in it*. When one gives \$1.37 for a barrel of gypsum containing three bushels, about 46 cents per bushel, he should know how much of gypsum he is buying,—not to be forced to pay \$1.37 for a barrel of something, one-third of which is only worth, at the highest rate, six cents per bushel;—nor made