

ing what I repeatedly asserted—that if one of the eleven chemical substances contained in all cultivated crops, be entirely absent from a soil, that soil is incapable of producing those crops, and to all intents and purposes is a barren soil. Thousands of acres of choice land are now deserted in the Southern States, and hundreds in our own State, which might probably, by the application of lime alone, be made to yield 50 bushels of wheat per acre. I mention lime particularly, because it is used by all plants in larger quantities than either of the other chemicals, and consequently the soil is deprived first of it. Sulphate of lime is another most important manure, and especially beneficial to grass crops—for the reason that it adds to the soil one of the indispensable eleven—viz, sulphuric acid, which is just as necessary to the growth of plants as lime, and without which no crop can possibly grow. It consists of

Sulphuric acid,.....	32 parts,	} parts in 100.
Lime,.....	30 parts,	
Water,.....	33 parts,	

Liebig says that 100 pounds of gypsum, or sulphate of lime, gives as much ammonia to soil as 6,250 pounds of horse's urine would yield to it: four pounds of gypsum, he affirms, increases the produce of the meadow 100 pounds. The decomposition of gypsum is very slow, and consequently its action lasts many years in the soil. Although sulphuric acid is required by nearly all plants, still it is only required in small quantities; therefore, when a man spreads a quantity of plaster over his fields, the effects last for several years.

I have frequently heard farmers say, that they did not consider plaster of any service, except the first year, when the results were great—that they had continued to put it on in quantities, year after year, without perceiving any superiority in growth over the first year, and that they had determined not to use any more of it. Now, the fact is, if they used 500 pounds to the acre, a sufficient quantity of sulphuric acid was added to the soil, to last any crop you could put on the land for four years, and consequently, any additional quantity was superfluous and perhaps hurtful.

If you cannot readily obtain plaster, no better substitute can be found than anthracite coal ashes; they contain 10 per cent of sulphate of lime, 10 per cent of lime and sand, together with oxide of iron, alumina, azote, silica, magnesia, oxide of manganese, sulphuret of iron, and alkaline salts. Sixty bushels of coal ashes per acre, would be

equal to six bushels of plaster (as far as sulphuric acid is concerned) for grasses. I can assure you, there is no manure that I have tried, the effects of which are more immediate and certain, than coal ashes. Last summer I experimented with it upon clover and Timothy grass, and likewise upon trees, with great success, and recommend its use to all. The proper plan for all young farmers would be, when they purchase a farm, to become acquainted with the properties of the soil by analysis. They should understand analysis themselves, to some degree—if not, for \$20 they may have their soil analyzed, instead of proceeding in the dark, wasting manure, seed and time, they will know precisely the substance deficient, and by applying it, will frequently produce great results at a small cost. Next to lime, the substance must probably absent in all cultivated soils, will be bone earth. By all the analysis recently made, bone earth and potash, are found in less quantities than any other substance, except perhaps lime. They are both indispensable to all crops; I would therefore advise the frequent use of bone dust, lime and ashes, upon all soils that have been long under cultivation.

It is the want of these three substances, particularly, that has rendered not only the soils of all our old States, once so fertile, and almost inexhaustible in the estimation of the first settlers, now barren wastes. The old Countries too may be held up as examples; the Island of Sicily, once the granary of Southern Europe, now import their breadstuffs; the soil of Italy, in the neighborhood of Rome, once affording food for hundreds of thousands, is now sterile. Such will be the case in the whole of Europe, as well as in this Country, if the present system of arranging drains in all the large cities, to carry millions of dollars worth of the fertilizing and enriching manures into the ocean, is not stopped. If we take from our soils annually, all its productions and return nothing to it, exhaustion will of course be the consequence. Liebig says, every farmer is a practical chemist; if so their practice is bad. He further says, "there is no profession which can be compared in importance with that of agriculture; as to it belongs the production of food for man and animals—on it depends the welfare of the whole human species, the riches of States, and all commerce."

To Destroy Insects on Trees, Shrubs, &c.—Tie up some flower of sulphur in a piece of gauze, and dust the plants with it.