

CHLORINE.—Chlorine is another of the necessary constituents of a fertile soil. In its pure state, it “is a yellowish, green colored gas, which has an astringent taste, and a disagreeable odor.” When breathed, it excites violent spasm of some of the upper parts of the wind-pipe, and has a very irritant effect on the organs of respiration, even when very much diluted with air. In the soil it is almost always united to soda, and *very* rarely to lime, magnesia or potash. United to any of the bases, it loses its poisonous properties. With soda it forms the different kinds of common table salt. It is believed to add to the weight of the grain.

The above compose all of the substances necessary to constitute a fertile soil. In some soils, manganese is found, which is the oxyd or rust of a metal called manganese. This, though occasionally found in fertile soils, and in the ashes of plants growing on them, yet is not essential, since its presence does not increase, nor its absence decrease the productiveness of a soil.

The air, in common with the vegetable matter in a soil, furnishes to plants, carbonic acid, out of which they form woody fibre, and all substances in them which contain charcoal.

Besides this, it in common with many manures, affords ammonia, a substance which supplies a great share of the nutritious parts of plants, and constitutes, by its elements, a large part of the mass of the bodies of the vegetable and animal creation.

Water is supplied, in this country at least, wholly from the atmosphere, in the form of dew or rain.

To recapitulate, then, we have as food for plants furnished by the soil alone:—

Silica or sand,	Magnesia,
Alumina or clay,	Potash,
Iron,	Soda,
Lime,	Chlorine.

We have furnished in a great measure by the soil, but partly also by the air:

The elements of Phosphoric acid—

The elements of Sulphuric acid.

In localities adjacent to the ocean, bay, or indeed any salt water, there is always present in the air, both soda and chlorine in the form of common salt.

We have furnished in a great measure by the air, but partly also by the soil:—

Carbonic acid containing carbon—

Ammonia containing nitrogen, and

Water.

These contain all of the elements necessary to the perfection of vegetable and animal life. Those of them which are not present in the soil in sufficient quantities, and which cannot be derived