By carefully preparing the seed, and by practising almost absolute cleanliness in the operation, the disease of smut, so detrimental to the farmers' profits, may be wholly avoided.

## PHILOSOPHY OF MANURES.

*To the Editor of the New York Farmer & Mechanic.*

SIR,—Since the cultivation of the soil, in some form, and on a scale more or less extensive, may be regarded in this country as a universal profession, the Philosophy of Agriculture therefore, among us, should constitute a portion of every man's stock of knowledge, for without some acquaintance with the subject, few, in whatever station they may be placed, can discharge their duties as American citizens, or rightly appreciate the means to promote the best interests of the nation.

Endeavouring to carry out these principles, I am induced to write the following:

Agriculture is the true foundation of all trade and industry, it is the foundation and riches of the State. This being so self-evident, it will be needless to attempt any preliminary remarks on the benefits of the same—but a rational system of agriculture cannot be formed without the application of scientific principles, as such a system must be based on an exact acquaintance with the means of nutrition offered to vegetables, and with the influence of soils and manures upon them.

This knowledge we must seek from chemistry.

The greater part of all vegetables consists of but four elementary substances, namely, *carbon*, *hydrogen*, *oxygen* and *nitrogen*, and often of the three first alone, while the remainder is composed of certain salines, earthy, and metalic compounds, which form the ashes that remain when vegetables are burned. The former are called the organic, the latter the inorganic elements, and it has been ascertained that the latter, although occurring in very small quantities, are as essential to the development of the plant as are the former. The material question therefore arises, what are the best means of supplying these constituents for the use of the plants?

With regard to the carbon of plants, the general opinion was, that it originated in the substance called *humus*, a vegetable mould which is present in all fertile soils, and which is merely the remains of former vegetation, in a state of decay. This substance, either alone or in combination with lime, and other alkalies, was believed to be absorbed by the roots, and thus to furnish *carbon* to the plant.

But this view, by recent experiment, has been shown to be quite untenable; and that in the economy of nature the supply of carbon to plants, is beautifully associated with the restoration to the atmosphere of the oxygen, removed from it by the respiration of animals and other causes, and thus preserves the air constantly, in the same state of fitness, to supply animated life.

Proving from analysis the properties of *humus*, it is found that it cannot yield to vegetables, in the most favourable circumstances, more than a mere fraction of their annual increase of carbon, and that, notwithstanding the variety of forms and substances, the average amount of carbon produced on an acre of land, is exactly the same, viz., about 100 barrels per annum.

It has been said, that in the fields and orchards, all the carbon removed, as herbs, straw, seed or fruit, is again replaced by manure, and yet this soil produces no more than the first or maiden, which was never manured at all. It is therefore certain that carbon must be derived from some other source, and if the soil does not produce it, it can only be extracted from the atmosphere.

In attempting to explain the origin of carbon in plants, it is not considered that this question is intimately connected with the origin of humus. It is universally admitted that humus arises from the decay of plants. No primitive humus could therefore have existed, for plants produce humus. Now, where did the first vegetables obtain their carbon, and in what state is carbon contained in the atmosphere?

It is quite evident that the quantities of carbonic acid and oxygen, in the atmosphere, remain unchanged by lapse of time, therefore, they must stand in some fixed relations to one another. a cause must exist; which prevents the increase of carbonic acid, by removing what is continually produced, and there must be some means also of replacing the oxygen, which is removed from the atmosphere by the respiration of animals, combustion, &c. Both these causes are united in the process of vegetable life. Now, carbon exists in the air only in the form of carbonic acid, or carbon united to oxygen.

It has been already mentioned that carbon and the elements of water, form the principal constituents of vegetables, the generality of the substances which do not possess this composition, being proportionably very small, and the relative quantity of oxygen in the whole mass of vegetables, is less than in carbonic acid. It is therefore certain that plants must possess the property of decomposing carbonic acid, since they appropriate its carbon to their own use, the oxygen being returned to the air, while the carbon enters into combination with the water or its elements, plants thus affords a continual source of pure oxygen which supplies the loss that the air is constantly sustaining—animals on the other hand *expire* carbon, (in the form of carbonic acid) which plants *inspire*, and thus the medium of the air is preserved constantly unchanged.

We must now briefly allude to what is the source of *nitrogen* in plants. This element is highly important as being an essential part of those vegetables which serve as food to men and animals.

Nitrogen is also supplied to the atmosphere in the form of ammonia, when the land is unmanured, but on the other hand, the chief use of animal manure is to yield more ammonia than the earth can furnish, and for this purpose the kinds of manure are the best, which contain the largest proportion of ammonia or nitrogen. Hence the high value of liquid manure to solid, the former containing more nitrogen than the latter. Thus 100 part of wheat grown on land manured with cowdung, a manure containing the smallest proportion of nitrogen, affords only 11 97-100 parts gluten, while the same quantity grown on a soil manured with human urine, which is very rich in nitrogen, yields the largest proportion yet found, viz. 35 1-10 per cent.

These ideas if carried into practical effect may be of inestimable benefit to the agriculturist, and thereby to the whole people and nation.

Yours truly,

C. W. S.

New York, June, 1844.

## BIRDS vs. CATERPILLARS.

On Sunday we saw, from our parlor window, on the top limb of an apple tree, a caterpillar's nest that had escaped the general havoc that had been made of their edifices two weeks before.

In a moment after a beautiful little red robin alighted, and without ceremony began to pillage the contents of the nest. How many worms were abstracted we cannot say, but on examining the nest we found as many holes perforated in it as you will see in an old target that has been fired at.

We have not quite enough robins in this vicinity to do the whole business, but they aid us much. When we have once been over the trees and broken up the nests, the birds find it easier to make an impression. If, in any New England district, there are more rot ins than caterpillars, drive them this way, if you please, and we will feed them gratis.

The cherry birds have already made our canker worms scarce. If you would have these worms multiply again, kill off the cherry birds in June; it will cost you nothing but powder, and shot, and time; while you will have the pleasure of mangling your cherry tree limbs and destroying more fruit than the birds would carry off.—*Massachusetts Ploughman.*

*Yeast.*—Boil one ounce of hops in four quarts of water until the hops fall to the bottom of the pan, strain, and when milk warm, add six ounces of flour and five of sugar; set the mixture by the fire stirring it frequently; in 48 hours, add four pounds of potatoes, boiled and minced fine; next day bottle the yeast—it will keep a month. One-fourth of yeast and three of warm water, is the proportion for baking.—[The editor of the Chronicle states that he has tried this recipe and found it good.]

*Valuable Salve.*—Take three carrots and grate them; place in a vessel and cover with lard, without salt. Boil thoroughly, strain and add sufficient bees-wax to make a paste. This is a most invaluable ointment or salve, for cuts, burns, scalds, or wounds of any kind.—*Saturday Courier.*

*Peach Trees.*—Screenings of anthracit coal are a good protection of peach trees against worms. Place around each tree, box two feet square and six inches deep and fill it with the coal; and they have indication of worms about them.—*Jerseyman.*