

organic matters, with which they are in contact, to assume new forms, or to enter into new chemical combinations. Hence, the sap of plants almost always undergoes more or less rapid decomposition even when preserved from the contact of both air and water. When this decomposition has once commenced in the sap, it is gradually propagated to the woody fibre, and to the other substances of which the mass of the stems and roots of plants is composed. Hence, recent vegetable matter will undergo a comparatively rapid decomposition, even when buried to some depth beneath the soil, and the elements of which it consists will form new compounds more or less useful to living plants, in circumstances where dry, and where many forms of even partially decomposed vegetable matter would undergo no change whatever."

Here is stated one way in which green manures tend to improve the soil, and furnish food for any crop sown afterward. Without now noticing other principles "on which the efficacy of green manures depends," which are explained by Prof. Johnston, I will state some of the "important results by which, in many localities," green manuring is "uniformly followed"—these results being peculiarly so in this region. He says:

"The plowing in of green vegetables on the spot where they have grown, may be followed as a method of manuring and enriching ALL land, where other manures are less abundant. Growing plants bring up from beneath, as far as their roots extend, those substances which are useful to vegetation, and retain them in their leaves and stems. By plowing in the whole plant we restore to the surface what had previously sunk to a greater or less depth, and thus make it more fertile than when the green crop was sown."

2d. "This manuring is performed with the least loss by use of vegetables in the green state. By allowing them to decay in the open air, there is, as above stated, a loss both of organic and inorganic matter—if they be converted into fermented (farm-yard) manure, there is also a large loss, as we shall hereafter see; and the same is the case, if they are employed in feeding stock, with a view to their conversion into manures. *In no other form can the same crop convey to the soil an equal amount of enriching matter as in that of green leaves and stems.* Where the first object, therefore, in the farmer's practice is, so to use his crops as to enrich his land, he will soonest effect it by plowing them in in the green state."

Other beneficial results, which the Professor states, are, the immediate benefit accruing from turning under green crops,—that grain crops following such manuring are never laid, and produce grain greater in proportion to the straw than fermented dung—"that green manuring is especially adapted for improving and enriching soils poor in vegetable matter. Living plants draw their sustenance not only from the earth but from the atmosphere. Plow in these living plants and you necessarily add to the soil more than was taken from it—you make it richer in organic matter."

The question arises, are any soils beyond the reach of this improvement? "Those only are so upon which plants refuse to grow at all, or on which they grow so languidly as to extract from the air no more than is restored to it again by natural decay of the organic matter which their soils already contain."

And now, Messrs. Editors, to the point in question—the kind of plant to be used as a green manure. Prof. J. says:

"But for those plants which grow naturally upon the soil, agricultural skill may substitute others, which will increase more rapidly and produce a larger quantity of green leaves and stems for the purpose of being buried in the soil. Hence the selection of particular crops for the purpose of green manure manuring—those being obviously the fittest which in the given soil and climate grow most rapidly, or which produce the largest quantity of vegetable matter in the shortest time, and at the smallest cost."

I have drawn rather largely from Prof. Johnston's work, but thought it necessary to more thoroughly elucidate my subject to those farmers who do not read such works, and to induce them if possible to buy such books and enlighten themselves.

Different plants have been used in different soils and climates for green manure, some being more applicable to one place than other. Spurry, white lupins, vetches, rape, buckwheat, rye, turnips, borage and clover, are enumerated by Prof. J., to which may be added peas and corn sown broadcast or in drills, and turned when about two or three feet high. Those plants which shade the ground best, and thus keep it free from weeds should be used when available, the more especially when such plants contain the most nitrogen, a valuable stimulant to the growth of all living plants. Chemists say the straw of beans, peas and all pod or leguminous plants, is richer in nitrogen than in straws of grain or cereal plants. Dana's Muck Manual says, "pod plant straw contains more vegetable matter, and a greater quantity of potash salts, than grain straw; more geine, more ammonia by putrefaction, and are therefore preferable for composts." For the same reason are pod plants most beneficial where they can be used for green manures.

The sugar cane crop, as I have before stated, exhausts the land of the constituent principles necessary for the growth of that plant. The planter must make sugar every year, and his object is to reinstate his land as quickly and as cheaply as possible. He cultivates his acres by hundreds, and the expenses of a sugar plantation are very great without the item of manuring.

Experience has shown him that the Cow pea is the readiest, cheapest and most remunerative manure that he can use, turned under as a green manure. It furnishes to the soil all that it has lost by former cropping, and enables the planter to raise fine crops for several years; some planters only sowing peas every six or seven years on the same ground. The best peas are thought to be those raised in Mississippi. Why so I cannot tell. They cost from one dollar to three, per bushel, according to the supply and demand; average cost about two dollars. When the corn is being laid by, they are sowed in one of the furrows next every row of corn, at the rate of half a bushel to three pecks per acre, more or less. After the fodder is pulled and the corn gathered, the whole of the vines and corn stalks are turned under with a large plow of three or four mules, and left to decompose.

This land is then planted in January or February, with cane or cotton as the case may be.

The crops, following such green manuring are, *ceteris paribus*, (other things being

equal) excellent, showing by their vigorous growth and healthy appearance, the beneficial result of the manuring.

That this kind of manuring is all that is needed by farmers to improve their lands, I do not say—but that it will be found one of the best means in connection with others. And that the pea as a green manure will render less assistance from other manures requisite in improving poor soils, I do not for a moment doubt. I shall rely on it mainly in improving a farm I own in Maryland, and may at a future day be able to give you some practical results in the shape of my experience there. That the cost is less than clover, and its beneficial results greater, can, I think, be well established by some Maryland farmers who have already tried it. If my remarks induce any one to use the pea as a green manure, let him give through your columns, the result, with all the attendant circumstances. It is by published experience that we learn good from evil, more than by private observation. H. H. Bayou Lafourche. La.

MISTAKEN REASONING.

Nothing is more common than the practice of forming false opinions from insufficient data. It is a fruitful source of all the differences existing on various subjects in agriculture.

A single trial may be followed by certain effects. They may be accidental, and not occur again; or they may often occur, and yet have no connection with the supposed cause. A solitary proof of this sort should never be received as anything more a suggestion for further trial. If, on being repeated, the same effect follows, the probability is increased; but it is only by many trials under all possible circumstances, that an indisputable connexion between cause and effect is established—a mode of proof, known as the *experimentum crucis* of Baconian philosophy.

We may adduce a few examples. Some years ago, the theory was advanced that electricity was a most important agent in the growth of plants. It was found that a grape vine, planted at the foot of a lightning rod, made a growth several times greater than another vine in a similar soil a few yards distant. This was thought to be proof positive—"no doubt at all," but the electricity streaming down the rod, stimulated a most vigorous growth of the vine. An experiment to prove the same theory, was made by burying a copper wire a foot or more beneath the soil, the ends of which passed upwards like lightning rods, and terminated in sharp points. The row of beans planted over the buried wire, was twice as large as any other beans in the garden—another "indisputable proof" of electrical influence. It was found however, by more careful examination and other experiments, that the rapid growth of the vine was solely owing to the deep and loose bed of earth, made by digging the large hole in which the lower end of the rod was buried; and that the loose earth of the trench in which the wire was laid, was the sole cause of the fine appearance of the row of beans.

The luxuriant appearance of the grass under the shade of a tree standing in a pasture, was pointed out recently as a proof of the theory that "shade is the best manure." The tall green growth at this spot, was indeed in strong contrast with the short pasturage elsewhere; but a further examination proved