

decided will be its efficacy. Man requireth bread as well as meat, and the earth requires vegetables as well as mineral substances.—*Baltimore American Farmer.*

FOOD OF PLANTS.

The following article from the *New Genessee Farmer*, will strike the intelligent reader, as being entitled not only to be read, but studied. It is written by Dr. Lee, of Buffalo, New York, a gentleman possessing powers and original views upon all subjects connected with science, and who has also, the happy knack of making people understand him.

To understand the process of nature by which certain elements of earth, air, and water are transformed into living plants, and the best method of preparing these elements so as to produce the largest crops at the least expense, are objects worthy of the careful and profound study of every cultivator of the soil.

If we take 100 pounds of ripe hay, oats, wheat, or corn, including the roots, stems, and seed, and burn them in the open air, we shall have only about three per cent. of alkaline earths left, most of which can be dissolved in water. 'If we burn a pound of candles or a pound of oil, whether animal or vegetable, the whole of these substances, (which are truly the "fat of the land") will be formed into invisible air and vapour. The atmosphere and water are nature's great storehouse for preserving an exhaustless vegetable food. By *respiration, fermentation, and rotting*, all organic structures are transformed into gasses and soluble salts. It is from the lime dissolved in the ocean that the oyster elaborates its shell, and the coral insect rears its massive mountains of coral rock. It is mainly from the phosphate of lime held in solution in its mother's milk, taken from her food, that the sucking calf elaborates its solid bone. Without lime to be dissolved in her gastric juices, and taking into her circulating blood, the hen can make no solid shell to her egg. The unnursed infants in the great cities of London and Paris, and fed on arrow root and other food that contains little or no lime, have soft, cartilaginous, rickety bones, simply because neither animals nor plants can make *something from nothing*.

As a general rule it is strictly, and moreover it is a truth of great practical importance, that a feeble, diseased stem in wheat, liable to rust, &c., and a shrunken berry are owing to some removable defect in the food of the plant. So different are the essential elements of the seed of the plant from those of its straw, that it is practicable to raise wheat that will yield twice as much grain in weight as there is in weight of straw, taking it from the root. That it is also practicable to grow wheat which will give five times as much straw as grain, most farmers know by sad experience.

On page 254 of Transactions of the New York State Agricultural Society, 1842, Gen. Harmon, of Wheatland, states that "in 1803 Pettin Sheffer, Esq., of this town, harvested 40 acres of wheat grown on the Genessee flats, that produced 62½ bushels per acre." What elements did nature provide, and where did she get them for the growth of such a crop? Manifestly they came from the mineral and vegetable matter washed down from the highlands above.—Those elements are just as abundant now as they were in 1803, or at the close of the creation. Having found out within the last forty years, since Mr. Sheffer harvested his famous crop, what these vegetable elements are, and how to combine them under more favor-

able arrangements for the production of *cultivated* plants that nature has anywhere done, men of science have greatly exceeded the above large product. From nature's crab apple that weighs less than an ounce, science has at last grown fruit weighing twenty times as much, or 2,000 per cent. more than the original.

By the use of charcoal and lime, Mr. Pell, of Goshen, in this State, has harvested this season at the rate of 78 bushels 24 quarts of wheat per acre. The ground was accurately measured by a surveyor's chain, and the grain in a sealed half-bushel, and the statements are all sworn to by two respectable men. I notice this triumph of science with the more pleasure, from the fact that I have long and zealously urged the use of these abundant elements upon the attention of the readers of the papers for which I have written.

It is more than twenty years since I first began to use pulverized charcoal to absorb the gasses given off by decomposed vegetable and animal matter, urine, and the like, to be applied to garden and field crops. Its value in correcting the taint in meat, and purifying rain-water in filtering cisterns, led me to believe that it would be just the thing to absorb the food of plants from the atmosphere, into which so much passes, and hold it about their roots in a condition that neither dew, rain, snow, frost, nor the heat of the sun, would injure it or take it away. To labour hard to save and draw out manure on to one's fields, and then to lose 60 or 80 per cent. of this vegetable food by its solution in water, and washing away to form something like the Genessee flats in the bottom of Lake Erie, I never regarded as very good economy—which by the way, is the soul of good husbandry.

A pint of urine contains ammonia enough to make, with the other necessary elements, 60 pounds of good wheat. Charcoal will absorb this liquid, and render it quite inoffensive to the olfactories of the nose. The direct application of urine to the soil, after the German practice, is bad economy, unless the soil contain a large portion of humus or vegetable mould, for its tenacious retention. It is a better plan to have a reservoir filled with pounded charcoal under the stable floor, or near to the stable, into which the liquid excretions of all animals should be conducted like cider from the press. When nearly, or quite saturated with urine, this coal will be manure of extraordinary power and durability—for nothing in the soil, but the roots of growing plants, will be likely to extract a particle of this vegetable food.

After wheat, corn or grass has taken up all this nourishment, the coal (unlike lime, which has parted with its carbonic acid in the same way) is insoluble in water, and remains, as in a filtering cistern, to absorb and hold, for the benefit of the growing plant, more vegetable food from every rain that falls to the earth. For be it remembered, that dew, rain and snow—the poor man's manure, bring back to the earth all the gaseous elements given off by all the fires, respiration and other decomposition of solid and liquid matter.

For the same reason, coal should be largely used in the formation of compost heaps. And where the farmer has straw which he can use to make beds for his horses and cattle in the stable; this, with a quantity of coal pounded with a flail, can be spread upon the stable floor, to absorb all liquid excretions. All these excrementitious substances should be kept under shelter. Wood ashes, lime, and muck, or vegetable mould, are valuable ingredients in all compost heaps. The coal stratum