

## AGRICULTURAL.

## COAL ASHES AS A MANURE.

From a favorable result of an experiment made in Ohio, of employing coal ashes for manuring corn, noticed in another column of this day's Cultivator, we have been induced to inquire to what extent and to what effect, this now material has been elsewhere applied, and we communicate to the reader the result of our inquiries, there are two kinds of fossil coal—bituminous and anthracite. Whether the ashes of the two kinds differ in their fertilizing properties or not, we are unable to say. But the facts we are about to state refer to ashes of the bituminous coal, which is the kind principally used in Great Britain, as well as in the valleys of Ohio and Mississippi.

Davy says, that coal, on distillation, gives carbonate and acetate of ammonia, which are said to be very good manure: and that soot, derived from the burning of coal, and known to impart fertility to a soil, owes a part of its efficiency to the ammoniacal salts which it contains.—p. 35.

"The ashes of coals and cinders," we are advised in British Husbandry, "have the very perceptible effect of loosening as well as stimulating those soils, (clays and heavy tenacious loams,) and when they can be procured in sufficiently large quantities, in the neighborhood of great towns and manufactories, they are ploughed in with great advantage, to the extent of fifty or sixty bushels, or even more, to the acre. The ashes of coal, wood, and turf, when used for domestic purposes, are, in almost all country places, mixed up by the consumers with the dung-hill, and unless they form an unusual proportion of the heap, occasion but little sensible difference in the properties of the manure; but when applied alone, as top dressings upon grass, they both strengthen the herbage, improve its quality, and encourage the growth of white clover; they are also used for many other crops both of corn and artificial grass."—p. 332.

"Coal ashes," says the Complete Grazier, p. 565, "when properly preserved, supply an excellent top-dressing for clover, on dry, chalky soils, in the quantity of fifty or sixty bushels the acre, scattered in March and April, and are equally beneficial on grass lands, on which they are spread during the winter, or in the following spring. The quality of coal ashes may be much improved, by covering up, in every cart-load of ashes, one bushel of lime, in its hottest state, for about ten or twelve hours, when the lime will be entirely fallen. The whole is now to be well mixed together, and turned over two or three times, when the cinders, or half burnt pieces of coal, which would otherwise be of no use, will be reduced to as fine a powder as the lime itself. It should however, be remarked, that in order to obtain this benefit from coal ashes, they should be kept perfectly dry; and when thus prepared, they are stated to improve swampy, moorish soils very materially, and in a very short time."—Cultivator.

## MANURES.

There is, perhaps, no subject which has been more written about than that of manures.—There is nothing of more importance to the farmer than manure, and at the same time there is nothing about which one-tenth of the farmers trouble themselves so little as manure. It is a law of nature, that plants or vegetables shall have sustenance, or something which they may take into their systems and convert to an increase of their own substance and strength.

Now it has been found that there are various substances which form this aliment.—

They may be classed in different manners. Perhaps the most simple but at the same time most general classification is, into Vegetable, Animal, and Mineral. Mixtures of these may be called a compost. And perhaps this kind may be the most useful of any, and all things considered, the most easily accumulated. Vegetable matter is abundantly scattered around us, and the gathering it together and putting it into a situation to undergo putrefaction, or as it is called decomposition, is a business which almost every farmer can occasionally attend to, and thus by little and little accumulate a large quantity of valuable matter which he can supply to his crops and increase his produce. One thing which he would strongly recommend to every one who wishes to gather manures of this is the immense quantities of Canada Thistles which in too many situations infest the road sides and waste places of our State. If they should be cut down and carried to the compost heap, they would be converted into a useful substance, and a nuisance be removed.

Another substance which can be easily obtained in many places, is the decaying leaves in the woods and swamps. In a dense wood there is a thick covering of these annually deposited, and which may be collected by the boys and *youngers* in great quantities and converted into manure.

Sods from the road sides and from other situations where they are not needed, may be also collected.

These matters thrown together, and a little quick lime and ashes added, with animal matter, if at hand, soon begin to ferment, and become a homogeneous mass, suitable for nourishment to plants, and a valuable aid to the cultivator. Some farmers have made it a rule to hire a hand a month, whose sole business it should be to collect materials for the manufacture of compost; and have found it an advantageous mode of management.

In addition to the kinds of materials which we have mentioned, we may also suggest *peat* as a subject of consideration.

We have almost inexhaustible quantities of this substance in the country. It is found in almost every bog. It is worth while to examine these bogs in different sections, and to institute some experiments upon the *peat* when found to test its qualities. We know of some of our readers who are now engaged in experiments of this kind, and we hope to hear from them when they come to definite conclusions upon the subject.—Maine Farmer.

## SCIENTIFIC GARDENING.

The following articles, taken from an excellent little work entitled, "*Alphabet of Scientific Gardening*," will be continued occasionally. The attention of farmers should be directed to the useful instructions they afford, as the principles stated are for the most part equally applicable to farming and gardening.—Ed. Bee.

## FOOD FOR GARDEN PLANTS.

It is obvious that a cabbage, a pine apple or primrose, can no more live without a due supply of food, than a rabbit or canary bird; but animals must moreover have a peculiar kind of food; the rabbit, greens and oats; and the canary, rape, millet, or other small seeds, while in the case of plants, which are fixed to a spot and cannot travel about to select their food, such differences, when they do exist are not often of practical importance, the food of all plants being nearly, as far as it is known, very similar in kind.

The principal difference in most garden plants compared with others is their greater delicacy: and hence, so far as practice is con-

cerned, their food must require if I may use the term, more delicate and refined *cooking*, and management. This will appear as we proceed, in the several branches into which it will be advantageous to divide our subject, beginning with what may be termed Garden Chemistry, meaning thereby a detail of the chemical elements which enter into the food of garden plants.

## GARDEN CHEMISTRY.

Passing over, for the present the food on which young plants are nourished at their first germinating from seed, which is as different, as we shall afterwards see, as the milk diet of our own infancy is from beef and bread,—let us consider the food requisite for plants after they have exhausted the milky pulp contained in the seed lobes and seed leaves.

After young animals are weaned, they are nourished upon vegetable or animal substances, or a mixture of both, together with water to drink, that is, a solvent to dissolve the more solid matters. These have to undergo the process of digestion in the stomach, where the heat is uniformly ninety-eight degrees, and the mixture of the various substances effected by the motion of the stomach, which is similar to that of an earth worm. On the pulpy mass thus produced in the stomach passing onwards into the chyle-gut (Duodenum), it is mixed with a portion of bile which separates it into two portions,—one useless, that passes off through the bowels, and another useful, which is taken up by the mouths of innumerable small tubes that open on the inner surface of the intestines, and after all these small tubes unite into a single large one, they discharge this useful portion into the blood. Such, in brief, are the first processes by which animals are nourished with food.

Plants, on the other hand, having no stomach, like animals, for the digestion of food, and being incapable of travelling from the spot where they are planted, (except very partially by extending their roots,) must depend altogether on what they can meet with there.

We find accordingly, in the surface earth, or soil where the roots of plants are, that processes are always going on very similar to digestion in the animal stomach; I mean, that portions of animal and vegetable substances in the soil are dissolved (I might in one sense say digested) and mixed with the water and air diffused through the soil.

In this point of view, the whole of the soil where a plant is rooted, may be considered as similar to the mass produced in the animal stomach by the first process of digestion, and consisting of two portions, one useful and the other useless. The soil would thence appear to perform an office, similar to that of the animal stomach, in preparing the food of plants,—the process, independent of other circumstances going on more slowly from deficiency of heat in the soil, which in this climate at least, is, on an average, far below ninety-eight degrees, which is the heat of the animal stomach.

The only thing in the soil that appears similar to the motions of the bowels of animals, by which the digested food is brought to the mouths of the little tubes, to be forwarded to the blood, is the motion of the water, or moisture in which the useful portion of vegetable and animal substances are dissolved, a motion quite indispensable, as we shall afterwards see. This water being then diffused through the soil, a portion of it must offer itself to the tips of the root fibres, or rootlets (spongelets) somewhat similar to those on the inner surface of the animal intestines.

It being of the first importance to ascertain of what materials the useful portion of the substances thus dissolved in water consist, many experiments have been made for that purpose;