

AGRICULTURAL.



I.—THEORY OF AGRICULTURE.

We continue a few more extracts on the subject of Organic Manures:—

A third class is formed of those manures of animal and vegetable origin which, though highly fertilizing, are not liable to rapid decay; and are, therefore, permanent in their effects, and may be kept for application in a dry state. Such are bones, hair, hoofs, hen manure, guano, wood ashes, and soot.

Bones are of great value, as they afford that rare and important substance, phosphate of lime, along with a rich animal matter; ground bones, or "bone dust" are now an important article of traffic as manure, and are cheap to the farmer even at the rate of a dollar and a half to two dollars per barrel;—as five bushels are considered to be sufficient manure for an acre of turnips, especially if mixed with a little wood ashes. Every farmer should collect and apply bones. They are very valuable, even after being burned or boiled with potash for soap; because they still contain their phosphate of lime, though deprived of their animal matter. Where means for grinding bones cannot be obtained, they may be broken into small pieces by the hammer; they may then be mixed with an equal quantity of earth or ashes, moistened, and left to heat before being put into the drills. For practical illustrations of the value of bones, I may refer to Jackson's Agriculture. Among other instances, he mentions, that a dressing of 600 bushels on 24 acres of poor pasture, had so improved the grass, as to double the yield of butter; and this effect endured for many years. In this case, the pasture had been laid down for ten years, and, no doubt, much of its natural phosphate of lime had been exhausted, to form a constituent in the milk and bones of the cattle that had fed on it. In another case, he mentions a ten-fold yield of turnips, and a great improvement in succeeding grain crops, as resulting from its application.

Hair and Hoofs are rich manures, though they decay slowly. Such substances from tanneries, etc., should be saved and applied to the land. At the rate of twenty or thirty bushels per acre, they produce marked effects.

Hen's Manure and Guano are very rich in nitrogen and phosphates, and may hence be regarded as the most concentrated form in which the most rare and expensive parts of the food of plants can be supplied. They contain, in the solid form, all the substances which are present in liquid manure, in a state of solution. From two to four cwt. of guano are sufficient on most soils to raise a good crop of turnips, and a succeeding grain crop; but as guano does not contain much of the ruder and more common organic matters useful in the soil, it is best to use one or two cwt. of guano, with half the usual quantity of other manure. To render the guano more easily applied, it should be mixed with sand or dry soil before sowing it.

The great value of *Wood Ashes* may be estimated from the

remarkable effects produced by them in new land, where the ashes of forests,—the growth of centuries—are at once applied to the surface. The substances which they afford may be learned from the following analysis of the ashes of beech wood:—

Potash,	15.83 per cent.
Soda,	9.79
Common Salt,	0.23
Lime,	62.37
Gypsum,	2.31
Magnesia,	11.29
Oxide of Iron,	0.79
Phosphoric Acid,	3.07
Silica,	1.32

These are the principal substances on which new land depends for its fertility; and the loss of which, either by wasteful cultivation or by repeated burnings followed by rain, causes its exhaustion. These ashes produce the best effects, when a considerable proportion of the vegetable matter of the soil remains unconsumed; both because this vegetable matter serves to retain the ashes, and because it prevents their caustic effects from being too strongly felt. On the other hand, when the vegetable matter is entirely consumed the ashes are rapidly wasted, and the crops suffer from deficiency of organic manure. Leached ashes, having lost their potash and soda, are of less value than recent ashes, but are still of great utility.

Ashes may be applied with any crop; but not in very large quantity, as they not only act powerfully as a manure, but exert a caustic or decomposing influence on organic manures and the roots of plants. Fifty bushels per acre is the largest quantity that can be safely applied to heavy soils, rich in vegetable matter. Lighter soils should have a much smaller quantity; and on light soils even a few bushels will produce marked benefits. *Kelp*—or the ashes of sea weed—and peat ashes, are similar in their effects to wood ashes, but less powerful.

Soot contains ammonia, and sulphates, carbonates, muriates, and phosphates of lime, potash, soda, magnesia, &c. It is, therefore, a very powerful manure, and, like guano, need be applied, but in small quantity.

To this class of manures, I may add the heads and back bones of codfish, which may be obtained in large quantity in some of the fishing districts. If dried, and packed in old barrels or crates, they might be preserved, and conveyed into the interior districts. As they consist entirely of phosphate of lime, and rich animal matter, they are nearly as valuable as guano, and would be well worth 5s. or 6s. per cwt. They should be cut up, or crushed, and mixed with soil, to ferment before being applied. They should be used in drills with potatoes or turnips.

It may also be of service to add here, that night soil, urine, and other offensive animal substances, may be converted into a manure of great power, and quite inoffensive, by mixing them with powdered charcoal, or charcoal and gypsum.—They may then be sown like guano, and will produce similar effects. Artificial manures, called *poudrettes*, are often prepared in this way. Farmers would find it profitable, to have constantly at hand a quantity of charcoal and powdered gypsum, for such purposes.

II.—PRACTICE OF AGRICULTURE.

CARROTS FOR HORSES.

In Great Britain, many of the most successful agriculturists, and cattle breeders, feed their horses liberally, and, indeed, in some instances, quite exclusively on roots. The carrot they hold in high estimation for this purpose, and