

soils. Of police dung, more generally is required to produce the same result. No kind of manure acts well on wet ground, the water preventing the access of air, and thereby obstructing the changes necessary to render the manure soluble. On light dry land, especially in dry seasons, and with potatoes that produce their tubers near the surface, there is a great advantage in planting the sets first in the drills, and then spreading the manure over them. In an experiment made last season, with great care, on sandy ground, manured with fully 40 tons of good dung to the Scotch acre, the produce was, with the sets placed over the manure, 224 cwt. 2 qrs. per acre; and, with the sets under the manure, 270 cwt. per acre. One man additional is required, in applying the manure in this way, as more care is necessary in putting it in; but this expense is much more than counterbalanced, by the better quality of the crop, and by the freedom from loss, by exposure to the sun and frost.

Composts.—Of the various substances used to make composts with common dung, peat earth seems to have succeeded best. One or two parts of dung are mixed with three of peat, in alternate layers. This, after one or two turnings, and time for moderate fermentation, becomes a rich mass, valuable for all soils, except those of its own character. In using peat as a manure, the lower strata, which seem to have been deposited from a solution in water, should be used rather than the upper, which consist of more recently decayed vegetables, very low in the scale of organization.—Peat earth, from the upper strata of bogs, unless fermented, produces a variety of sour weeds, not easily eradicated. Mixing lime with farmyard manure is a most pernicious practice. The lime attracts the carbonic acid, causing the ammonia to fly off, and rendering insoluble and nearly useless some parts that were before its addition soluble and valuable, and leaving a dry and comparatively useless mass.

The Urine of domestic animals is a very valuable fertilizer. In some parts of the continent, the solid parts of animal excrements are mixed with the fluid, and water added, to make the mass liquid, and in this state applied to the land. It is, however, generally kept in tanks till it has undergone a certain degree of putrefaction, which requires about four or five weeks, when it is considered fit for use. A very good method is to allow it to flow into a pit containing peat, which absorbs a large quantity. After this it is fully saturated, and then allowed to ferment for a short time, it forms a very good manure. The fluid that exudes from the dunghill should either be returned to it, or used in some of the ways mentioned above. It is valuable for all crops.

Night Soil.—The value of night soil as a manure, is now, perhaps, universally admitted. It has been for a long time, extensively used in China, and in most parts of Europe. Most of its components, as the animal matters, phosphate of lime, phosphate of soda, &c., are, by themselves, very valuable. By the laws of China, no part of human excrements is allowed to be thrown away. The Chinese manure cakes are composed of night soil and marl, dried in the sun. In this state it is sold to the farmer, who uses it either in powder or dissolved in water. Night soil has been estimated by some as equal to six or eight times its weight of stable dung. Mr. Dixon, of Lancashire, who recommends it to be mixed with dry peat earth, says it is worth a farmer's while to go twenty miles for it. The Craigintinny meadows, irrigated from the sewers of Edinburgh, produce often six

crops in the year, and some parts are let at £30 per acre, rent. Land in the same vicinity, which, a few years ago, consisted of loose sands, growing nothing but whins, by the same means have been converted into meadows, let at £15 to £18 per acre, annually. In Paris and London manures are prepared, of which this is the basis. When simply dried, it loses about 70 per cent. of water. Davy advised it to be mixed with lime; but that expels the ammonia, causing great waste. The same objection holds against the Chinese method of mixing with marl, which contains lime. Recently prepared and finely powdered charcoal, or peat ashes, are much better as they destroy the odour, as well as the lime, and absorb the fluid parts, without dispelling the more volatile.

Potter's Disinfected Manure is prepared at Whitechapel, by mixing night soil with a considerable quantity of recently prepared charcoal powder, and then drying the mass in a very gentle heat. It is chiefly used for turnips. From 13 to 15 bushels are considered equal to 10 bushels of bones. It is best suited to sandy soils. Price, in London, 13s. 6d. per quarter of 8 bushels.

Bones have effected a greater improvement in agriculture than any manure introduced in modern times, though guano seems likely to rival, if not to supplant, them. At present, in addition to all the bones collected in Great Britain, a large quantity is yearly imported, the declared value of which, in 1821, was £15,898; in 1837, £254,600. The chief ingredients in bones are cartilage and phosphate of lime (commonly called bone earth,) but there is nothing in their composition which is not a direct constituent of vegetables. In some places farmers prefer unboiled bones; in others, they buy as readily those from which the fatty matter has been extracted. As the various phosphates that have been tried have produced good turnips, it has been thought that the phosphoric acid is the grand manure for turnips; and, accordingly, sulphuric acid (vitriol) has been added to bones, with, it is reported, perfect success. In this case, the vitriol unites with the lime of the bones, forming gypsum, and leaving the phosphoric acid free. They are most useful on light, dry, sandy soils—next on limestone and peaty land; but on the strong clay or wet ground of any kind they produce little benefit. Some recommend that the bones should be mixed with three or four times as much earth; but, at any rate they should be allowed to ferment for a short time before being used. They have been applied as a top-dressing to grass, wheat, &c., in dust; but it seems more useful for turnips than for any other crop, though it has also succeeded very well with potatoes. The feeding quality of turnips, raised from bones, is said to be superior to that of turnips raised from dung. The quantity used by the acre varies from fifteen to forty bushels. For the turnip crop, a bushel is considered equal to a ton of well-made manure. An excellent method is, to use dung, and to drill in with the seed bones mixed with earth. In consequence of their high price, they are occasionally adulterated with lime that has been used in tan-works, old plaster, soap's waste, saw-dust, rotten wood, oyster shells, &c. The best remedy is to purchase from a respectable merchant. The average weight of the bones of a fat ox or sheep is one-fourth of the carcass, wanting the offal.

Bran, the ashes of which contain nearly 50 per cent. of phosphate of lime, has been used as manure for turnips. In 1842, an excellent crop was grown on bran, or pollard, alone. The ground on which it was used has since produced a very good