

GARDENING NOTES

(By Mr. J. JOYCE, Landscape Gardener, Christchurch.)

MANURES.

Lime.

When lime is mixed with decaying matter (writes Dr. Lindley, at one time professor at University College, London), it hastens its decomposition and renders it more easily assimilable by plants. This is its chief horticultural value, if regarded as a manure. In old cultivated land, rich in humus, it increases productiveness in a remarkable degree. Hence the increasing properties of dormant or animal vegetable manure. It has a most important effect in kitchen gardens. But limed-land soon loses its productiveness unless manure is subsequently applied, and poor soils are soon impoverished by it. To some plants, such as conifers, it is injurious; to others it appears to be an indispensable article of food, such as potatoes, barley, beet, peas, clover, etc. It also expels ammonia from manures.

Potash.

The ash, which is left after wood or other vegetable matter is burnt, consists to a great extent of potash, an alkali which seems to be indispensable to healthy vegetation. In uncleared countries the trees are burnt for the sake of this substance, which, after proper treatment, becomes the pearl-ash of commerce. It occurs in all plants, and with soda and lime is regarded as specially destined to serve as a base for the organic acids of vegetation. The periodical burning of whole districts of heather or grass lands, is for the purpose of manuring land with carbonate of potash, after which the scorched land is covered with a brilliant coat of green. Potash contributes directly to the formation of flowers and fruit.

Potash constitutes the most valuable part of the ashes left after a plant is burnt, and adds greatly to the fertilising effect of all composts to which it is added. Vegetable or wood ashes are esteemed the very best manure by the Chinese. The weeds that are separated from the land by the harrow are carefully burnt, and the ashes spread. The parts of the field where this has been done is easily perceived by the most careless observer. The ashes of burnt vegetables are also mixed with a great variety of other matters in forming the compositions which are spread on the fields or applied to individual plants.

Salt.

Common salt is very frequently used as a manure, and to plants naturally found on the sea shore it is indispensable—especially asparagus and seakale. It may be used on asparagus beds at the rate of 2½ lb to the square yard with most striking results, after the beds are dressed in the autumn, and again in the spring. It must not be used when the young tender shoots are appearing, as it is injurious to them at that particular time.

Phosphoric Acid.

It has been long known that bones exercise a very powerful effect upon plants. If broken bones are used as drainage for pot plants, roots soon find their way down to them and feed on them. Bone dust has been used for many years as a most valuable manure for turnips, etc., when drilled in with the seed. Pastures, which are constantly grazed by cattle, soon recover their fertility when a dressing of bones is applied. It is the phosphoric acid, in combination with the lime which constitutes the bones, that causes the fertility of crops when it is applied judiciously. By mixing bones with sulphuric acid, their lime is seized by the acid, and converted into gypsum, or sulphate of lime, and in part remains combined with the phosphoric acid, forming a super-phosphate, which readily dissolves in water, and is thus immediately presented to plants in a form in which it can be absorbed. Bones part with their phosphoric acid slowly, the consequence being that mere bones continue to produce an effect on land slowly but for a long time, while the effect of super-phosphate, which acts immediately, soon disappears. Super-

phosphate of lime, is prepared by pouring over bones their own weight of sulphuric acid, or by using their acids diluted with twice their weight of water, and, when effervescence has ceased, adding to the mass sawdust, peat, charcoal, bonedust, or any other dry powder, which will make it suitable for drilling; or, it may be mixed with a large quantity of water, and used as a liquid manure. The mixture can be applied at the rate of about two bushels to the acre. The apparent effect of phosphates is to stimulate vegetation, and to promote the formation of roots. All plants, whose ashes have been examined, contain phosphates, which may therefore be regarded as a universal vegetable food. Phosphates are now regarded as the most important ingredients in manure, with the single exception of ammoniacal salts.

Sulphur.

Plants contain, either deposited in their roots or seeds, or dissolved in their juices, variable quantities of compounds containing sulphur. In these nitrogen is an invariable constituent. Two of the compounds containing sulphur exist in the seeds of cereal plants, and in those of leguminous vegetables, such as peas and beans, etc. A third is always present in the juices of all plants, and it is found in the greatest abundance in the juices of those which we use for domestic purposes. Sulphur alone can be used to advantage as a manure. Not being soluble in water, it cannot pass as such into the plants; still, if it is well pulverised, it will be converted (by attracting the oxygen of the air) into sulphuric acid, which will then unite with any basis of the soil into a sulphuric salt. It is doubtful if sulphur could be used on a large scale.

Farmyard Manure.

Well made farmyard manure is probably the best manure to use for general purposes in the garden, because of the great variety of substances which it contains. It owes its black appearance to vegetable mould, and its peculiar odor to ammonia and sulphuretted hydrogen. It acts mechanically by the undecayed straws of which it consists, and it contains within it all the alkaline and earthy salts and phosphates that were locked up in the tissues of the various plants of which it is composed.

Guano.

The deposit of sea birds is the richest of all manures. It will contain, if of good quality, about 17 per cent. of ammonia and 25 per cent of phosphate of lime, upon which alone its value depends. There is no garden crop which it does not suit if too much is not applied at the time. The liquid form is most preferred by gardeners.

Fowls' Manure.

The cleaning of pigeon and fowl houses is almost as strong in its effects as guano. It must be mixed with sand or dry soil so as to be able to handle is conveniently. There is always a danger of using it too strong.

Green Manures.

This is a very good manure for some places, as it consists of young highly nitrogenous matter, ready to pass immediately into fermentation and decomposition, and to restore immediately to the earth all that it has abstracted. Moreover, if plants used for this purpose are taprooted, they bring up from the depths of the soil a large quantity of alkaline and earthy matter, and leave it near the surface, within reach of the roots of plants with less power of penetration. It is said that by this method the most infertile land may be rapidly rendered productive. Any crop, which forms large leaves and grows fast, being sown thick and ploughed or dug in, as soon as it is coming into flower, rapidly enriches land poor in organic matter, or exhausted by repeated cropping, and renders it fit for renewed cultivation.

American Catholic papers chronicle the ordination of a Redskin, in Wisconsin, by Bishop Koudelka. His name was Ti-bish Kogi Jik, but he has substituted Gordon for it.