

ECONOMIZING PHOSPHATES.

THE USE OF LIME.

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Now that the price of fertilizers has soared so high it seems almost out of place to attempt to discuss their respective merits. Moreover, some kinds of fertilizers, such as potash salts, are altogether unobtainable, and others are so scarce that with certain limitations the choice of the farmer as to the kind he will use is extremely limited and guided by what he can purchase in a very uncertain market. Hence, although lime cannot replace phosphate, which will always be required for certain purposes—notably, for the stimulation of the turnip crop—lime in one or other of its forms is such a great and general ameliorator for all soils, and deposits of limestone are so generally distributed throughout New Zealand, that it seems only natural that we should turn to lime to maintain and increase the productiveness of those lands which are threatened by the fertilizer shortage.

The word "lime" is commonly used in two senses, having either a general or special application. In the general sense it is used to denote many compounds of lime, such as carbonate, sulphate, oxide, and hydrate. All of these are white compounds of earthy texture when in the powdered or in the amorphous (non-crystalline) form, and their external character and feeble solubility in water are such that lend themselves readily to the general designation "lime." This has the sanction of usage, and there is also the fact that they all contain calcium oxide, combined, however, with acids or water to form totally different substances from lime properly speaking. If we want to speak very accurately and to limit the word "lime" to one body of definite chemical composition we must apply it only to the oxide of calcium, also popularly called "quicklime," "shell-lime," "roche-lime" (or "rock-lime"), and "cob-lime," and retain the word "limestone" for the commercial substance which contains the lime in the uncalcined state and therefore present as carbonate of lime. It is preferable to use the term "ground limestone" when speaking of this substance. To call it "carbonate of lime" is somewhat hyperbolic. Although it contains carbonate of lime or, more properly speaking, calcium carbonate, many samples on the market contain as little as 60 to 70 per cent., the balance being clay or other siliceous matter. In any case it is desirable that chemical terms may be restricted to substances which are fairly pure chemical products, otherwise if the farmer learns to call such stuff as a 60-per-cent. ground marl carbonate of lime he may also learn to pay the price of carbonate of lime—in the same way as he would if he asked for sodium chloride when he only wanted common or rock salt.

Lime or calcium oxide is the oxide of the metal calcium, in the same way as rust is the oxide of the metal iron when the latter is combined with the oxygen of the air. Calcium is one of the most abundant metals contained in the crust of the earth. Clarke estimates