

DISSOLVED BONES.



R. AITKIN thus writes of dissolved bones in the North British Agriculturist: Bones contain about half their weight of phosphate of lime, the other half consists chiefly of organic matter. The phosphate of lime in bones is what is called insoluble phosphate, that is to say, a combination of phosphoric acid with as much lime as they can unite with. One-third or two-thirds of the lime can, however, be taken away and still leave definite compounds. When two-thirds of the lime has been taken away, the compound formed is soluble in water and is called soluble phosphate of lime. The object of adding sulphuric acid to bone phosphate is to remove two-thirds of the lime by converting it into sulphate of lime, just as in the case of superphosphate, which is a mixture of soluble phosphate and lime and sulphate of lime.

In dissolving bones, however, it is found that if enough of acid is added to convert all the phosphates into the soluble form, the whole is converted into a liquid mass, which refuses to dry up and is unfit for use as manure. This is owing to the organic matter in the bones. There is therefore a practical limit set to the proportion of soluble phosphate which dissolved bones can maintain. As a rule, in the case of pure dissolved bones, not more than half the phosphate is present in the soluble form. The usual practice of manufacturers of pure dissolved bones is to add more acid than is necessary, and to dry up the product with fine bone meal, and, by careful mixing and somewhat laborious treatment, produce a sowable manure.

Other things besides fine bone meal are often used as dryers. Steamed bone flour dries more effectively than bone meal, but if it is used to any great extent the product will be somewhat high in phosphate and somewhat low in ammonia. Bone ash is found to be a still more absorbent substance, and it is used much to dry up dissolved bones. Bone ash, however, contains no nitrogenous matter, and is very rich in phosphate, and therefore when it is used the product is high in phosphate and correspondingly low in ammonia. Bone ash is not bones, it is simply impure phosphate of lime derived from bones. The same may be said of bone char, which is frequently used as a dryer, and which gives the black color to many manures sold as pure dissolved bones.

In England there is scarcely to be found a manure sold under the name of dissolved bones which is a genuine article. A great proportion of them contains no bone material at all, and the term dissolved bone is really a conventional name applied to compound manures consisting of any kind of mixture of phosphate and nitrogenous materials which can be dissolved with or without an admixture of bone.