

found in wood ashes, in guano, in poudrette, and in very small quantities in some marls and limestones. To supply phosphates we should either look to bones, to Mexican or Patagonian guano, but certainly not to the latter at its present price.

There has been lately discovered in New York and New Jersey what has been called mineral phosphate of lime. If these deposits, as to their quantity, answer the expectations of their discoverers, they will prove a cheap and abundant supply of phosphates. As soon as it may become a commercial article in our markets, I shall examine it as to its agricultural value in relation to other sources of supply, and make public the results. At present it is stated that the New Jersey mineral is less rich than the New York mineral in phosphate of lime. It is very probable that we have similar deposits in the upper sections of our State. I shall look most diligently for them. Should any exist they will prove a most abundant and cheap supply of this, one of the most costly and valuable articles of manure.

#### MODE OF APPLICATION.

The manner and form in which a manure is applied is frequently of as much importance as the manure itself. Bone dust is comparatively of high cost, and very often the form in which it may be applied is of great consequence. Bone dust should never be applied except in the finest powder, dissolved in sulphuric acid and mixed with ashes, or some fine compost, or in the liquid form. True economy, which is the judicious application of means, requires that it should always be dissolved before using it. In agriculture we have to deal with two varieties of the phosphate of lime; one, the bone earth phosphate or bone-dust, in its natural form; the other, the acid phosphate of lime, superphosphate, or biphosphate. One of the greatest boons which science has conferred on art is that of dissolving bones before using them. In the condition in which bones originally exist, and even when they are ground to the finest powder, they are still comparatively insoluble, and we must apply a large quantity to supply the growing crop. When dissolved by means of sulphuric acid they are then very soluble, can be spread much more equally over the soil, and will exert a much speedier influence on the crop. It is not out of place here to speak of some of the more important changes which take place on the addition of sulphuric acid to bone dust or phosphate of lime. Pure neutral phosphate of lime contains of

Phosphoric acid,	-	-	-	48.50 per cent.
Lime,	-	-	-	51.50 per cent.

Biphosphate of lime is composed of

Phosphoric acid,	-	-	-	71.50 per cent.
Lime,	-	-	-	28.50 per cent.