

agricultural requirements, and this demand is yearly increasing at a very rapid rate. The occurrence of natural phosphates presents the most varied and interesting modes of formation, as may be surmised by finding their deposits, not only in nearly every geological system, but in many different series of the same system.

Now in beds which may be, have a fresh water or marine origin, now appearing as hardened conglomerate or rocks, and sometimes as sand and loose gravel: then again in vein formation or pockets, sometimes amorphous, at other time crystallized.

In the matter of texture, colour and other physical characters, we find the same endless variation.

The origin of the demand for these phosphatized products is comparatively of recent date. It was only in the commencement of the present century that crushed bones were employed as a fertilizer in agriculture, and strange to say, only then on account of the gelatine or organic matter they might contain.

The following curious statement which appeared in a scientific journal in the year 1830, *à propos* of the employment of crushed bones in England, exposed the ignorance on the subject at that day and reads as follows:—"As to earthy matter or phosphate of lime contained in the bones, we may disregard it. It is insoluble and indestructible, and *cannot serve as a manure*, even in damp soil, and in immediate contact with the rootlets of the plant."

The suggestion of Liebig, to treat the bones with sulphuric acid, opened a new era, to the utilisation of phosphatic materials in agriculture and the manufacture of artificial manure was soon established.

The illustrious Elie de Beaumont thus expressed himself with regard to the commencement of the mining of mineral phosphates. *—"Colbert has said that France would be lost for want of forests, and everyone perceives that without coal his prediction would soon be accomplished. In his day, one would have failed to comprehend how a great country might disappear."

NATURAL PHOSPHATIC DEPOSITS.

These valuable provisions of nature are the result of various causes and agencies familiar to the geological observer and their contained

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