

of sowing wheat or planting corn, or may be used as a top dressing to wheat in the spring; and

7. That the purchaser should well ascertain the composition of the manure when bought, as it may and does vary from many causes.

Under this head I shall also speak of some large deposits of phosphate of iron which I have examined. "Earthy phosphate of iron. Blahe Eisenerde Fer phosphaté terreux. H. Blue iron earth. The color of this variety on its first exposure is gray, yellow, or greenish white, or with a very slight tinge of blue, afterwards it becomes blue of different degrees of intensity," in some instances equal to deepest indigo. "It occurs massive, disseminated in or coating other substances, and is sometimes bare, and occasionally cohering and with an earthy fracture, it is dull, meagre to the touch, soils the fingers slightly and is light. B. B. It becomes reddish brown and then melts into a brownish black slag, attractable by the magnet. It occurs in clay or mud more or less mingled with animal matter, from which the phosphoric acid is conjectured to have proceeded? Also in argillaceous deposits in many places where it seems to have had its origin from the decomposition of animal substances. It has been brought from Styria, Corinthia and Greenland. The friable varieties have been met with in forming excavations in the river mud of the Isle of Dogs, in the same deposit at Toxteth, near Liverpool. On the surface of morasses in several of the Shetland Isles, at Ballagh, in the Isle of Man, accompanying animal matter as the bones of the elk and deer. Bog iron ores are frequently more or less contaminated with phosphate of iron, and the cold short quality of the cast iron obtained from them, has been supposed to be owing either to the direct combination of phosphoric acid with the metal in the process of smelting, or to its not leaving the iron with which it was already mixed in the ore. It is evident, however, that phosphoric acid could not escape decomposition in the intense heat of the smelting furnace."* (Phillip's Min., Boston 1844, p. 367.)

This deposit will prove of great value to their immediate localities as a substitute for bones. Large deposits occur on the farm of Mr. James Mulliken, in Prince George's, and I have also noticed it in several other places in the same neighborhood. When pure it contains about 28 per cent. of phosphoric acid. The average of six different analyses of the above deposit, taken and made at different times, shows 16 per cent. of phosphoric acid.

So that every hundred pounds of the above substance contains as much of phosphoric acid, the chief valuable constituents of bones, as about 64 pounds of fresh bone dust. One hundred bushels then thoroughly mixed with lime will contain the same amount of

* I have obtained 6 per cent. of phosphoric acid from cold short pig iron. *Extract of a letter from D. Stewart.*