

unless he uses the shell marls, which, as before stated, contain ample proportions of phosphate of lime.

7.—MARSH MUCK AND PEAT.

I am strongly impressed with the great value of these materials for enriching land, when properly prepared and applied, and I cannot but express surprise that it continues to be much neglected by those by whom it can be so easily obtained.

In several of the Northern States it has been used during many years with the most beneficial effects, and whilst it is being constantly availed of by those who had not previously applied this material, those long accustomed to its use *never* abandon it.

With us I am glad to observe that its use is rather increasing, but in this regard we are yet seriously behind hand.

As its continued neglect is perhaps in part owing to some difficulty in preparing it for use by those who have not the proper knowledge or experience, it seems proper to add something to what I have hitherto written upon this subject.

This material, as is well known, is formed only in marshy places. It is made up of growing plants, and such as are in a more or less advanced stage of decay, to which is added deposits of fine sedimentary matter from water. When hills are contiguous, sand and other earthy matters are sometimes washed on the marshes. Apart from accidental mixtures of this kind, there is much similarity in the chemical composition of the marsh muck in different localities, whether they have been formed in fresh or salt water. The salt water muck contains more soda than that produced in fresh water, in which latter potash is the predominating alkali. They contain a portion of phosphoric acid, and the examination of specimens from more than thirty localities, by Prof. Johnson, gave proportions of nitrogen equivalent to from one to two and a half per cent. of ammonia. They contain a large proportion of vegetable matter and soluble humus, besides soluble and insoluble alkaline silicates.

Its characters are often influenced by the properties of the fresh waters flowing into the marsh, which may be more or less calcareous or feruginous. In the latter case if the oxide of iron be united to carbonic acid there is a deposit of carbonate, or of oxide of iron, which is not injurious. If, as is often the case, we have sulphate of iron or copperas mixed up with the muck, we must decompose it by means of lime or marl. Gypsum is produced by the union of the sulphuric acid with the lime, and in this manner we change a hurtful substance into a valuable fertilizer.