

SMUT, RUST, AND CHES.

The April number of the *Michigan Farmer* contains a Correspondence between Mr. Charles Fox, of that state, and Professor Johnston, of Edinburgh; in which the subjects above are liberally discussed by the learned Professor. The following quotations are to the point, and deserve to be understood and practised by the Canadian farmers:

"Steeping in a solution of salt that will float an egg, and then drying the wet seed with quick lime; fermented urine, blue vitriol, (*sulphate of copper*,) and arsenic, are also used as steeps, for the same purpose of killing the fungus, with greater or less effect.

"The rust arises from the over-luxuriance of the growth of your wheat, which will diminish as the vegetable matter in your soil becomes exhausted by frequent cropping; but more especially from the wetness of your soil, or the rains and mists, to which, in the midst of so much water, your land may be subject. A good dose of lime might help this disease; but it will lessen as your land is better drained, and rendered drier.

"But it is your chess in wheat that has amused me. The chess is a *Bromus*—a kind of grass, which resembles in its straw the young wheat, but which branches out in the head like the oat. Assume, with all botanists, that species cannot be transmuted, and the production of wheat from a *Bromus* is impossible. If it be impossible, then how are your facts to be explained? You mention two cases.

1st. That of *new land*, when broken up and sown with wheat, chess comes up. This means, when correctly interpreted, that the seed of the chess was more abundantly in the soil naturally, than the grass you added artificially; and perhaps, also

that more or less of your wheat was thrown out by the frost and destroyed.

2nd. On *old land*, where wheat is sown, if the wheat comes up thick and early, it will keep down the chess perhaps; if it is thrown out, or destroyed by frost, the blank spaces will be filled up by the sprouting of those seeds which are most abundant in the soil, which with you seems to be chess, as in the flats of Yorkshire it is the wild mustard. The error with the American farmers is, that they start from the false assumption, that the change of wheat is possible, and thus come to see proofs—just as our forefathers saw ghosts—where only natural appearances present themselves. Believe it to be impossible, and the explanation of appearances may cost a little more thought, but the expenditure of that thought, will lead to the *truth*."

If the wheat-growers of this country could, by any means, prevent the three diseases here described, it would be a means of doubling the products of this important staple crop. It is not going too far to assert, that one half of the wheat crop is annually destroyed by these three agents. So far as the two former are concerned, the only difficulty in obviating the evil is, to remove the cause, the means for doing which are within the reach of every cultivator. Destroy the *fungus* on the berry, by the mixtures mentioned by the Professor, and the first evil will be removed; and to remove the second, thoroughly clean the ground, and sow no chess with the seed wheat, and by practicing the system of sowing clean seed for a series of years, and allowing none to ripen upon the land, it will be good for *sore eyes* to see a single plant of this grass growing under this treatment. The total removal of rust from the wheat crop, is a far more difficult bu-