

extremely wet season is also injurious to the manure trade, but that is owing, not to such weather being injurious to the action of the manure (the contrary is the case), but to its hindrance of the work of preparation of land for the crops to which such manures are applied during this and the following month.

4. It is, however, the farmer's experience as a general rule that liquid manure is "more plague than profit." That this arises, perhaps, as much from his keen sense of its being a plague as from any well ascertained experience of its not being profitable may be admitted; for undoubtedly the use of the water cart enforced by the tanks being full at times when it is inconvenient to take the horses from other work—enforced too, at times when it is often unadvisable to apply manure to all; and, indeed, the use of the water cart at all—a new machine and new process altogether, hitherto unknown to ordinary agricultural routine—is felt to be a plague. Nevertheless, the profitability of the process, considering the extremely diluted nature of the manure, and the labour of its conveyance in this way, is often doubtful. The fact is, water should be the carrier of the manure, not merely the thing carried. And the prejudice (shall we call it) which leads the farmer to condemn the practice of carrying it to the land directly as manure, as a regular part of farm management all through the year, will yield when the labour of it disappears, and its fertilizing influences are obtained under the system by which a dilute liquid manure is its own carrier in large quantities to the land over which it is proposed to take it.

5. But then it is the farmer's experience that tillage operations are necessary during the growth of many of our crops: that a dry, or comparatively dry, condition of the land is necessary during the ripening of seed; that land cannot be tilled and seed cannot be ripened except the soil be comparatively dry. This, then, shuts out from the possibility of benefitting by these large liquid applications of manure a very large number of crops. Whether grain crops will benefit by such dressings during the grassy stage of their growth has yet to be satisfactorily proved. At any rate, land cultivated for grain crops cannot be that constant scene of sewage operations throughout the year which land must be to take the constant supply of sewage yielded by towns throughout the year. And, indeed, this truth almost entirely shuts us up to the use of the grasses as the only plants to be cultivated under the influence of liquid and sewage manures applied in large quantities. There are among the grasses particular species which are endowed with extraordinary powers of growth, and consequently of absorbing food. What we want is a plant which shall have in

its natural constitution, as exhibited in our climate, a power of growth corresponding to the quantity of food which in sewage manure is applied to the land.

A good deal of evidence has been taken before the committee of the House of Commons on this subject, as to the power of soils to store away the fertilising ingredients of manure for future use. And so far as regards its application during the winter season, when the weather checks the growth of grass, a conserving power of the kind is, no doubt, useful.

But during the summer, the time of growth, what we want is not a soil to lay up these fertilising matters as supplies against a time of use. The summer is the time of use. And what we want is a plant which shall be capable of using the material as it arrives. For this reason, too, the manure as it reaches the plant must be capable of giving out its fertilising matter for its use at once.

That of it which is capable of feeding the plant must be in a condition prompting it to leave the water holding it in solution on the very slightest invitation, and indeed to leave it without any invitation at all. For we believe that the maximum produce of grass is obtained when the air immediately above the flowing water is capable of feeding the leaves beneath which it flows, at the same time that the water is feeding the roots. In Italian ray-grass we have a plant exactly of the kind required, so also in many other grasses; for the Craigentinn meadows, which yield such extraordinary produce of grass, contain little, if any, of the Italian ray-grass. It is in these grasses, then, and not in the soil, that we are to find the true machine for extracting the food which sewage yields. The mischief which it does and the nuisance which it is must be reduced to a minimum by turning it to use in this way in districts where the population is at a minimum.

The facts and arguments thus addressed to the reader must lead him, we think, to the conclusion that the sewage of great towns like London should be taken many miles away to where sandy slopes exist, over which it may be poured, and through which it will filtrate easily, and by means of which, or rather of the grasses which may thus be grown upon them, or rather of the cows which may be fed upon the grasses, the filthy stream may "by cleanly manipulation" be converted into milk.—*Gardeners' Chronicle*.

The Value of Food.

Abundant, nay superfluous evidence has been furnished to prove that no one principle of food will alone suffice for nutrition; but clear and unequivocal evidence is still wanting to show how far each principle of food is essential to life