



The Field.

Night-Soil.

[We have received the manuscript of the following essay, which was read at the winter meeting of the Connecticut State Board of Agriculture, by Mr. W. H. Yeomans, of Columbia, Conn. It relates to a subject which we recently brought before our readers in an article headed, "A Valuable but Neglected Manure;" but "line upon line" is needed in regard to this matter, for people in general are wonderfully lethargic in reference to it. It is high time that economy and health should be duly consulted in the conservation and use of the material to which the subjoined essay relates.]

So long as vegetation exists upon the face of the earth, exhaustion of the soil will be a consequence, and this must be provided for either by natural or artificial means. Where the agency of nature alone exists, acting towards the end of exhaustion, she also provides the means of restoration; so that, although the trees of the forest grow and wax exceedingly great, or the herbage of the fields increases in luxuriance, the trees shed their foliage and dead branches, and if left undisturbed the herbage also decays and falls to the earth, and hence the elements of which it has been divested are returned, with perhaps an additional accumulation from the atmosphere. Therefore, if this were a universal law man's ingenuity would not be taxed to devise ways and means of restoring lost fertility; for where crops are taken from the soil and appropriated, so that their elements go in a different direction, so far as the soil is concerned it amounts to *lost fertility*.

The subject of manures of all kinds is one that has engaged the attention and serious study of the farmer in all the long ages that have passed; and yet to-day its importance, and the necessity for study and investigation, are no less than at first. The great desire is to know how, by the use of manures, the waste places of our land may be made fertile and luxuriant, capable of benefiting the owner as well as adding more to the general ornamentation of the farm. Of all the various kinds of manure which might be considered it is the purpose of this communication to present, in as brief a manner as possible, *Night-soil; its saving and uses*. There is probably no fertilizing substance that is more universally allowed to go to waste than this, and yet its value is almost incalculable. Undoubtedly one great reason for this enormous waste lies in the fact that where proper absorbents or deodorizers are neglected to be applied, the great unpleasantness of manipulation deters many from any attempts to utilize the same. But the waste is not confined alone to the farmers of the country; it is in the cities, with their immense population, where the waste is most complete and

enormous. A writer has said with a great deal of truth, "Manures of inestimable value are carried from the cities by rivers and lost in mid-ocean." Guano has ever been looked upon as the great concentration of fertilizing material; and yet night-soil, with all its valuable principles held for man's use, occupies no mean position even in comparison with guano. Jonathan Laurence stated at a meeting of the Vermont Board of Agriculture, "that the waste from the kitchen and the contents of the water-closet, if properly composted, would be of greater value than the same amount of many of the commercial fertilizers that are bought at a high figure by our farmers." Professor Hilgard, of the University of Mississippi, in a lecture before the Marshall Company Industrial Association, stated that "all the products of our fields, excepting a portion of the feed crops, ultimately go to serve as food or raiment to man. Hence man's excrement, rags, paper, and bone, must and do contain the ingredients withdrawn from our soils, and were we faithfully to return all these things in the proper form and in the right place, we should need no guano islands to eke out the deficiency in the return made in the offal of crops and manure of cattle."

Prof. J. F. W. Johnston says of it, "Night-soil is the most valuable of all the solid animal manures. When dry few other solid manures can be compared with it weight for weight. Dried night-soil is equal to thirty times its bulk of horse manure." It is necessary first to establish the value of an article, or else it is the height of folly to expend labor in attempts to save it. Therefore, unless we first establish the value of night-soil as a fertilizer, we should not be prepared to recommend its saving and use. There are hundreds of millions of people who till the soil for a livelihood, and whom we look upon as far beneath us in the scale of progress, enlightenment and civilization. We depend chiefly upon our barn yards for our fertilizers. Those millions have no cattle and no barn-yards, and yet they supply annually sufficient manure to insure a good crop. The same resource that they employ is at our command. They use it, and we, almost without exception, refuse it. We have no desire to recommend all the practices of the Chinese and Japanese, but it may properly be asked whether we may not learn a valuable lesson from their diligence in saving manures. An important item in their practice is carefully to save every particle of human excrement with which to fertilize their lands.

As Professor Hilgard has expressed it: "The Chinese and Japanese save man's excrement to the letter, and their crops seldom fail; their soils seem to be fresh all the time. Why cannot we, with all our boasted enlightenment, do as much?" It is said that when visited by friends a failure to leave on the premises either solid or liquid excrement is considered a great slight, and therefore the practice is adhered to with the utmost exactness.

This kind of manure is almost their entire dependence, and from this source a greater number of persons are supplied with food from a given area than are fed from a similar extent of surface in any other portion of the globe.

In the privy vault is to be found fecal matter derived from flour, eggs, beef, cheese, pork, beans &c., salted and peppered, and containing all the elements that are calculated to produce highly nutritious food; and since in case of animals the value of the manure depends largely upon the food consumed, how highly valuable must be human feces which is derived from such food.

The laws of China, it is said, forbid that any human excrement or urine should be thrown away, and reservoirs are placed in every house in which they are deposited with the greatest care. No other manure is used in their corn-fields. Says Liebig—"If we admit that the liquid and solid excrements of man amount on an average to 547 pounds in a year, which contain 16.41 pounds of nitrogen, this is much more than is necessary to add to an acre of land in order to obtain, with the assistance of the nitrogen obtained from the atmosphere, the richest possible crop every year." Think of this ye men who have families containing six or eight individuals—fertilizing in the best possible manner as many acres, when in all probability the same is at present but poorly applied if employed at all.

If the fact be so, is it not a proper subject for consideration? Let each farmer resolve that in the future, so far as lies in his power, he will endeavor properly to save and economically use all the excrement of the family, both solid and fluid, and what wealth will be added to our commonwealth!

In an Essay upon Manures published in the Iowa Agricultural Report for 1872, is found this language: "The economic relations of night-soil is one of the most important questions that demand the attention of the agriculturist; and not until its importance is fully appreciated will the exhausted lands of the East regain their lost fertility, and the steady impoverishment of our western prairies cease." If the saving and use of human excrement is the wonderful alchemy by which the deteriorated soils of New England are to be restored to their original fertility, much gratitude ought to be felt and expressed too towards those individuals who by experiment or otherwise have discovered its great value. Waring, in his book for young farmers, remarks, "Night-soil, or human excrement, is the best manure within reach of the farmer." And so evidence might be accumulated upon that point from every one who has ever carefully husbanded and properly applied this substance as a fertilizer. It has been estimated that the night-soil of England in the course of a single year is equivalent to 5,000,000 tons of the best guano. Allowing an average of 500 pounds of solid and liquid excrements to each individual in the United States, and the population to be 40,000,000,