

PRIZE ESSAY.

Liquid Manure.

"For out of the old fields, as men saith, cometh all this new corn from year to year."—*Chaucer*.

Leakage, leaching and losing is about the run of this late age; well, perhaps we are a little too fast. There is another age that has not fully arrived at its perfection, that is, the drain-age.

Some grand old Coles, with ancient ideas, consider this latter the most important age. Farmers are receiving in these gratuitous days a good share of attention in the shape of advice, bordering on judicious strictures. The gold mine in the barnyard is a fertile theme of the agricultural neophyte, and is easier handled with the pen than the pitch-fork. Liquid manure in the state in which it is usually found, is not generally considered of sufficient importance to warrant even a moderate outlay of expense in its application as a special fertilizer. This subject has been so thoroughly discussed and ventilated by the press, that to clothe it in originality is a task as difficult as to avoid dipping into somebody else's stew. There is no disputing its value as an agent of fertility; that is fully admitted by farmers and gardeners; the latter especially are loud in its praise. Their custom of applying it to soil rich in decaying vegetable matter, and in which a vigorous vegetation is being sustained, renders its active properties more effective. The method of applying it in a fresh state is probably as good as any, at least it has the sanction of some practical men who have had large experience in the matter.

Liquid manure in a fresh state is not to be construed as such in a natural or recently formed condition; we have visible proof of its first active principles in retarding vegetation. It is not usually available in quantity sufficient to make it an object of special attention in its crude state, unless from large steadings fitted with necessary mechanical appliances for its preservation in a reservoir easy of access. Farmers whose operations are on a limited scale won't go to the expense of special drains, tanks and water carts, with sundry necessary fixings that require additional intelligent labour to manipulate the machinery and to administer the slush; also, there is an uncertainty as to the strength of the solution applicable to the requirements of particular crops. Chemists are not always on hand to advise in these matters, and if they were the probability is that out of their laboratory they would be at sea in the solution. Could we determine the exact strength of the liquid suited to the crop we desire to fertilize, it would be all plain sailing. The application of liquid manure—on the best principles—is objected to by men of limited means on the ground of expense.

The next best plan probably is the manure port conveniently situated with regard to steading and of dimensions in proportion to stock. There are a few points in its construction not to be disregarded. The walls should be laid in lime mortar, with a drive way of sufficient width to allow free access and egress to a loaded cart. If the lay of the land is such as to admit of a through driveway it should be taken advantage of, as such a convenience greatly facilitates the labour; it obviates a great deal of "backing and filling." When liquid manure is required for a special purpose, advantage may be taken of falling weather to admit water from the roof in sufficient quantities to dilute the urine to any extent, so that it can be applied with safety to the growing crop or plants. The bottom should be substantial and permanently constructed with rubble stone of sufficient solidity to sustain heavy loads without breaking the surface. No danger may be apprehended from rats burrowing beneath or other cause of leakage, if care be taken in the construction.

At our annual agricultural fairs for several years, I noticed that one man always stood first on the prize list with several varieties of fruit, and as it was a privileged season for enquiring, I availed myself of the opportunity to ascertain the why and the wherefore of his success. Nothing particular was elicited, further than "the apples and pears would grow so." The spring following I visited his grounds and thought I discovered the secret of his success. There was nothing in his orchard at first sight to attract particular attention. The trees were not very young nor yet very old; a good many were out of balance, leaning promiscuously, indicating neglect in the first stage of their growth; a flock of sheep quietly cropping the young grass, and a pair of polled oxen with some young cattle

polishing the bodies of the trees filled in the picture. I enquired if it was his custom to allow animals among his trees; his reply was I thought significant: "I don't think what you see in here will do much harm." On closer inspection the ground in several places presented the appearance of water being thrown on it. Several trees were surrounded by low curbs, enclosing a space from 6 to 8 feet square. One of these curbs I noticed in particular; it was composed of narrow boards with three sides permanently secure, the other side by cleats and a couple of stakes at either end; the structure evidently was not intended as a fixture. He volunteered the remark, "it was some of the children's work; they must have something to amuse and keep them out of mischief." No doubt first rate employment for young ones and old ones too, whose business it was to give each tree a good drenching around the base. In connection with his steading was a capacious manure cellar, from which he drew large draughts of swash. His way of handling it was primitive and simple in the extreme. To the axle-tree of an ox cart, having the box removed, was a raised cask with a capacity of 80 gallons pivoted on two spars projecting behind. This piece of simplicity was backed into the cellar and expeditiously filled, a boy standing on a low staging dexterously handling a scoop similar to such as is used for grain. A close fitting cover, one half hinged, and a lever to control the discharge, was about the extent of this prehistoric system.

When full and the cover secured, it was taken to the orchard or field, upset, and the liquid left to find its own level. I considered his method of applying liquid manure about the "level best" thing out. To absorb urine and render it convenient to work with shovel and spade, good mold is sometimes used, and when thoroughly saturated and dried may be used to advantage. On farms where bog-earth or decomposed vegetable matter is to be had, it may be beneficially used as a ground tier of the port, provided it is prepared beforehand by exposure and drying. The port is supposed to be cleared of the contents twice a year, spring and fall; before dry earth is carted in, water may be let on in sufficient quantity to flood the floor to the depth of a few inches; in a week's time the water will be colored a light brown, and if desired may be used or left to be absorbed by the next coating of earth. The expediency of flowing the surface of the port with water may be questioned by some persons; but water is about as cheap and simple a substance for the purpose as black earth or any other bulky matter. One point in favor of water is that it acts at once, fixing the ammonia, and to a great extent dissolves the saline and mineral ingredients of the urine that have made their way to the floor, and otherwise would remain encrusted while the ammonia was in a great measure perfuming the air. Agriculturists generally have little, if any, knowledge of this complicated substance, and they don't evince much curiosity in the matter. They know that it is good for some plants, and they know practically that it does not contain all the essential elements necessary to the perfecting of vegetation.

A knowledge of the best mode of applying it with safety, to what soils, to what crops, and the best time of the year, are circumstances which render its use so troublesome in practice. That it is valuable as a fertilizer is a fact, that it should not be allowed to go to waste is another fact; but urine tanks, water butts and sundry fixings are not such excellent fixtures, as they are frequently represented to be.

Agriculture throughout the civilized world is yet in its infancy; half a century has glided away since science volunteered her unrestricted power to disclose the mysteries of husbandry. Folios of land literature have floated on the stream of time, primitive, scientific and plausible practice. The wooden-heads, the hard-heads and the leather-heads all have contributed their quota of information. Yet, after all this type sticking, how few out of the millions of grubbing bread winners are there that possess a knowledge of plant life, or in rustic elementary can brag of a knowledge beyond the dung hill. The farmer, to obtain means of livelihood from his ground, must look to the land itself, and in that sense cattle farming must be the integer. The acres are few and far between that can perfect the same order of plants in successive years; recourse must be had to the stock of the steading. All extraneous manures are an outgo, an expenditure of labour that could be more profitably employed in caring for and pro-

viding the byre with suitable accommodation and material to prevent leaching and evaporation.

Agriculture in its two-fold capacity, grain-growing and cattle farming, has always been the base of national prosperity. In regard to the preparation of barnyard manure for plant food, there are a variety of practices and opinions. Compost heaps are recommended as serviceable to absorb the liquid excretions of animals which are liable to be washed away. Composting induces fermentation and evolution, which, if allowed to proceed uncontrolled, renders the heap nearly worthless. The economy in composting stable manure is an open question. Some distinguished farmers are of the opinion that it is fussy, an effete practice, and should be dispensed with, the fertilizing properties of the heap being greatly impaired by fermentation. Fresh dung and caustic urine enter into present atmospheric union. To prevent loss by dispersion, plenty of dry earth or loam should be used in the cattle yards, the stable and the manure port. Unless care and attention is observed in the first stage of fermentation, a large portion of the ammonia contained and generated by the mass is dissipated and lost.

Practical horticulturists tell us that the liquid manure of animals, if rightly managed, is equal to the solid, that its action is more active, and that it contains a large amount of the salts so necessary to nutrition as well as the gaseous food of plants.

Liquid manure must always be subordinate to solid dung. Its exciting or stimulating effect is not permanent; although it may supply to a great extent the material out of which the plant is built, yet the application requires to be more frequent.

In horticulture and garden practice its application is simple, the effect prolific. In an orchard it may be distributed profusely, and a special application produces a marked effect on bloom, fruit and spray.

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Corn Growing.

There is one important item in corn growing which is well known to be a fact by those who have tried it, but which is not so well known by those who have not practised the system, namely:—Planting a couple of kernels of good, sound seed in every other hill, twelve or fifteen days later than the first planting; or about the time the corn is up and at the first hoeing. The principle of it is that these late planted seeds make fresh vigorous stalks, which has been found very generally to fertilize or fructify the ears better and more fully than is often the case with only the first planting. Especially is this result obtained when there has been a drouth or a dry season to reduce or stunt the vigor of the early planted stalks, but has affected the later planting somewhat less. The writer has repeatedly seen very beneficial or marked results produced by his course, and he confidently believes it will be to the advantage of farmers to make a trial (even on a small scale, which cannot cost much,) of this plan with the crop of the present season. We have, in past years found the gains much more than the cost of doing it. Take a few rows in a field and make the experiment of planting two kernels in alternate hills at the time of first hoeing, and then carefully compare the results with other parts of the field.

Precautions Against Drouth.

High manuring, thorough cultivation, and the free use of vegetable matter like muck, are the best of precautions for preventing to a considerable extent, the bad effects of drouths. Messrs. Lawes and Gilbert, of England, in their experiments found that heavily manured soils retained to the depth of thirty-six inches many tons more water than adjoining lands not so heavily manured. And in experiments with the spade it was found that where the soil was dug up to the depth of eighteen inches, and heavily manured, the crop did not suffer from drouth, although the crops on adjoining plots were all but dried up. Lawes and Gilbert also found that when the manure was heavily applied, and turned under a good depth, the water did not go through to the drains near so rapidly as on land not so heavily manured or so deeply cultivated. In both cases, where there was a large percentage of vegetable matter in the soil it acted as a sponge, retaining much of the water which soils differently constituted allowed to pass through. Drouths we cannot prevent, and it behooves us to guard against their injurious effects to the best of our ability.