

cartage. Consequently the dung is covered by ploughing in August, or in early September, and a seed-furrowing is done for sowing the seed in October.

The hitherto refrigeration of our globe from a state of expired combustion in a fiery mass, renders necessary the use of decomposing bodies as manures, to afford by decay the caloric to vegetables, and raise the temperature of the ground, and also to place bodies in quantity together in the ultimate elements at insensible distances, in order to produce the same results of caloric and temperature, by the mutual action of fusion and attrition. Hence there arises a most important consideration in what way, mode, or manner the articles of manure are to be applied, in order to afford caloric to the plants and temperature to the soil in the largest and most effectual manner that is possible.—Farm-yard dung buried in the cold clay ground can excite little action to raise the temperature of the soil—the quantity is too small to overcome the opposing resistance of clay and cold moisture, and the benefit is corresponding. Manure laid on the surface of the ground affords caloric in two ways; by sheltering from cold the vegetable growth, and by the residual decomposition of the substances sinking into and mixing with the surface of the ground, and producing the usual effect of mixture and combination. Farm-yard dung will be best laid on young wheats as a top-dressing in February and March, by means of timber railways placed on the ground at regular distances, and moved to the required positions. On this railway there runs a light iron four-wheeled waggon, which receives the dung from the carts at the end of the field, conveys it along the railway, and the dung is thrown from it on each side over the land in the quantity allowed, and to the distance that is convenient to the strength of a farm. The dung is immediately spread over the surface of the ground, and most carefully broken into small pieces, in order to cover every inch of ground for the purpose of a close protection. This performance must be very carefully executed, as the effect mainly depends on its disposition. The vicissitudes of the weather in suns, rains, winds, frosts, and thaws, will destroy the matters of the dung, and exert a joint effect on the surface of the ground. In the usual dry season of sowing grass-seeds, the land is well harrowed, in order to mix the light alluvium with the remains of the dung, which will produce a most choice bed for the grass-seeds that are sown upon it, and pressed into a covering by an iron roll not less than a ton in weight. The harrowing produces an alluvium top-dressing for the wheat that exerts a most wonderful effect on its growth, and is regularly done in Poland as a part of wheat farming. The mixture of the dung with the fine earth in the present mode, raises a bed for the grass seeds that is not equalled in any other way, and the heavy roll presses all matters together with the wheat plants almost invisible among the raised and compressed earth of the surface. The growth is quick and rapid from this bed of favourable composition, and surprises every observation and experience; the grass seeds are delighted in the matrix of a most intimate comminution of soil that is so essential to their nature, and which is not obtained from the stale surface of autumn-sown wheat, and manured at that time. This advantage to the grass seeds is very large, and along with the superior benefit to the wheat crop, constitutes a mode of applying farm-yard dung that is much beyond the value of the common way during late summer or early autumn, which prevents the full action of the manure, by denying the opportunities that are necessary for the full development of its power. The cold of winter follows the winter application, the increasing warmth of the returning sun attends the use of the dung in the early spring, and these two very different elements confer a power of the utmost value and efficiency. It must be studied that all applications of manures are made under the best known circumstances to develop their power, and promote their action.

It has happened to the writer of this essay to have had a very extensive and largely varied experience in practical farming, both on turnip lands and clay soils; and the length of the practice gave many opportunities of observation and experience. The prepared heap of farm-yard dung having failed to complete the manuring of a field of clay fallow in the end of August, a quantity of fresh dung from the stable door was applied to cover the remnant of the ground, and it was strawy and rough beyond the power of being covered by the plough, consisting of dry straws, and dry feces of the horse. The dung lay exposed till October, when the land was seed-furrowed, and sown with wheat; the matters were better covered then than by the summer furrow, while the harrowing pulled into pieces, and spread the dung over the surface. In winter the ground was pretty well covered with fragments of dung, among which the wheat soon evinced a superiority that continued very visible till harvest, and the crop was