

nothing but frost and snow is expected, no covering will be required, but the first heap, which should be chiefly completed in November when drenching rains frequently prevail, can be easily topped off when a shower is expected, so as to prevent excessive moisture from entering, in which case no covering will be required. In any system of manure saving, no water should be permitted to flow from the roofs of buildings into the yard, so that if some of the rain is collected in tanks, provision is made against a deficiency of moisture in the heaps during seasons of drouth, and a too quick fermentation may be easily checked at any time by the application of a few buckets of water.

When the temperature of the heap reaches 80° Fahr., carbonate of ammonia, a very volatile gas, is formed, and care must be taken to prevent its escape in appreciable quantities, for ammonia is the most valuable part of the manure. The heat first sets up in the bottom, gradually cooling towards the top and sides, so that no gas can escape until the top or sides reach this temperature. No thermometer is required, for a very small quantity of gas produces a pungent smell by which its escape can readily be detected. In winter the melting of the snow on the heaps will indicate that a loss of gas is going on. Sometimes the snow will be found in patches, in which case it is evident that the heat is not evenly distributed, and it is then a good plan to put a few forkfulls of fresh manure on the bare spots, tramping it compactly. If the heap is sufficiently moist and the temperature not too high, fermentation ceases with the formation of organic acids and gypsum, which, aided by other absorbents, take up the ammonium carbonate, saline matters being formed, which are not volatile. The temperature mentioned, however, will not destroy all the weed-seeds, and under circumstances requiring their complete eradication, the temperature must be raised from ten to thirty degrees higher, and kept in this state for five or six days. In this case it is evident that large quantities of the gas will escape unless an abundant supply of absorbents is present. In countries where manure saving is reduced to a science, the heaps are interstratified and topped off with dry muck for the purpose of fixing the ammonia and increasing the value of the manure; but our farmers will consider this an extravagant procedure until they come to our remarks on the process of saving manure by the use of absorbents without fermentation.

All this may be considered laborious work before it is attempted; but when it is considered that, in addition to the saving of \$19 on every cow, or her equivalent, during the winter months, an immense saving of labor in the reduced bulk and weight of the manure is made. It has been estimated by practical experiments that three loads of fresh will be reduced to one of fermented manure, and that three tons of fresh is reduced to two of rotted manure. From this let each farmer count for himself the quantity of labor saved during the busy spring in hauling, spreading and tilling alone, neglecting the increased availability, the beneficial effect on the mechanical condition of the soil, and the interest saved on the capital invested consequent on the conversion of the manure into plant food two or three years sooner than under the prevailing system of saving, or rather wasting, farm yard manure.

(TO BE CONTINUED.)

Our Northwest, Present and Future.

The importance of Manitoba and the Northwest as a factor in our commercial relations can scarcely be over-estimated. Wheat growing appears to be the characteristic of new countries, but this industry in these regions must not be compared with that of the early days in other portions of the Dominion. The agriculture of to-day is not the agriculture of then. The vast prairie stretching between the Saskatchewan and the base of the Rockies, tempered by the mild Chinook breezes, makes that region well adapted to ranching. But whether, on the whole, specialties or mixed husbandry is to become the more absorbing interest, depends upon circumstances which are yet to transpire. Theoretically, it makes little difference whether the farmer obtains half a crop every year, or a full crop every second year, the intermediate seasons being marked by total failures; but a few failures of this kind would unquestionably drive the yeomanry into the system of diversified farming. If they study the history of some of the Western States, they may see another controlling influence in the mists of the future. We refer to the control of the carrying trade. If high rates of transportation should prevail, farmers will be driven into the system of concentrating their grasses and grains into dairy products, and an impetus will thus be given to other industries, possibly to the detriment of other portions of the Dominion; for although our wheat raising capabilities here are gradually diminishing, our adaptability to dairying can no longer be questioned. Let each Province devote its greatest energies to those pursuits to which its soil, climate and other conditions are best adapted.

Yet Canadian settlers in Manitoba and the Northwest can learn much from the experience and failures of their past lives. They have learned the practical and instructive lesson that, no matter how fertile the soil, grain growing cannot be continued for a long series of years with impunity. They have learned that the system of tillage which consisted only of tickling the ground, resulting in the mastery of weeds which absorbed the profits, is a most pernicious practice. Any monotonous routine of farming, too long persisted in, is sure to terminate in the "Go West" movement. If we resign our affairs into the hands of nature, the grain belt will move towards the setting sun with almost imperceptible gradations, followed by the movement of the dairy belt, at never-varying distances.

The pioneers possess many advantages over those of Ontario and the other older Provinces. Having received greater educational advantages than their fathers, they are better organized, and manifest an instinct for infusing their enthusiasm into the feelings of their fellow pioneers from foreign lands. The aptitude they have shown for organizing in matters pertaining to their personal and collective interests is marvellous, especially when it is considered that their habitations are scattered over such a vast extent of territory. This isolation, however, cannot but act prejudicially to the educational advantages of the rising generation; but the practical information acquired by concerted action in their industrial affairs,

cannot prove to be of inferior utility to that gained in the best equipped public schools.

The objection which many foreigners urge against the climate is not participated in by Canadians. The dry, bracing winter is less keenly felt, more enjoyable, and promotive of better health for man and beast, than many of the slushy winters of the older Provinces. While we are recklessly slashing down our magnificent forests, thereby heaping further ruin and disgrace upon our climate, they may take warning by our fatal experience, and be stimulated to improve their climate and control their winter blizzards and summer drouths by hemming in their fields with waving walls of trees, and dotting their prairie regions with monumental forests. In our last issue we presented facts and illustrations by which these ends can be most successfully accomplished.

Another deviation from old Canadian methods is the occupation of immense farms, and the establishment of model farms by the C. P. R. along the line of that railway. Farming on a very large scale is still a doubtful enterprise, and the fate of the great Dalrymple Farm in Dakota has shaken the faith of many capitalists in such gigantic undertakings. Prairie lands are particularly adapted to big and high farming, and if it tends to no other good, it will be an education centre for small farmers, and will possibly stimulate them to greater exertion. With regard to model farms they will likely have the same effect; they may hasten development in many new directions, and an opportunity will be afforded of comparing their usefulness with that of government enterprises of the same kind.

There is a possibility of over-production and consequent reduction of prices in the beef business. At the present relative prices of field products and beef, there is more profit in the latter than in the former, but there is still a heavier pressure in operation. Wool and mutton raising is at a discount in the Western and Southern States, and the sheep owners are discussing the propriety of changing their investments into beef raising.

The English, as well as the Americans, are beginning to recover their senses in live-stock matters. In an address delivered at the Conference on Education at Kensington, England, Lord Fortescue made the following characteristic remarks, which should be taken into profound consideration by our farmers and stockmen:—"I think Mr. Jenkins is right in suggesting that the Royal and the other large agricultural societies might usefully divert to the assistance of the practical education of farmers' sons for farming, some of the money which they now (injuriously as I believe) devote to the encouragement of so over-fattening what are mis-called breeding animals, as to incapacitate some and deteriorate many more for breeding purposes."

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