THE GLEANER:

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OLD SERIES] *Nec aranearum sane textus ideo melior, quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes.* [COMPRISED 13 VOLUMES

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Agricultural Journal.

SONG OF LABOR.

I love the ploughman's whistle,
The reaper's cheerful song,
The drover's oft repeated shout,
As he spurs his stock along;
The bustle of the market man,
As he hies him through the town;
The halloo from the tree top
As the ripened fruit comes down;
The busy sound of the thrashers,
As they clean the ripened grain,
And the husker's joke and mirth and glee
'Neath the moonlight on the plain;
The kind voice of the dairyman,
The shepherd's gentle call;
These sounds of active industry,
I love, I love them all.
O! there is good in labor,
If we labor but aright.
That gives vigor to the day-time,
And a sweeter sleep by night;
A good that bringeth pleasure,
E'en to the toiling hours,
For duty cheers the spirit
As the dew revives the flowers.

From the Journal of the New Brunswick Society for the Encouragement of Agriculture, Home Manufactures, and Commerce, throughout the Province.

REPORT OF COMMITTEE ON DRAINING.

Continued from the Gleaner of Sept. 15.

It might be well however to consider wheher we ought not to have a *Drainage Act* as well as in England and other countries. We have tried Bounties on growing Wheat on New Land with but little good effect; a Drainage Act would operate as a bounty on the renovation of Old Land, and the adoption of an improved system of Husbandry.

We shall now suppose that the farmer has decided to drain certain fields as well as he can, and that he has determined upon the material which is to form the conduit, supposing that he is to adopt the approved system of covered drains.

In a general way, the field which is lowest should be first selected, the autumn is the best season for commencing operations, and grass land about to be broken up for oats is the best for working upon.

Having determined before hand, whether it is the surface water or that of the sub-soil, or that of springs in the field, or any two or more of these which he is to attack, he will now mark out or set off the line or lines along which the drains shall run, and perhaps make sure of the sub-soil through which they are to pass: the drain must then be dug and formed and levelled: and lastly the channel thus made must be properly filled up again.

Surface Draining:—This phrase has been applied by some writers to Smith's system of *Thorough Draining*, under the supposition that the latter process served mainly to remove the rain water which falls over the surface to be drained, which, no doubt, is often the case, but at present, we merely refer to open channels made so as to favor the flow of water along the surface of the field.

Arrangements calculated to facilitate this object are in general use: the ridging or drilling of land by the plough, when the ridges or drills are made down the slope—as they ought to be—serves this end: by *gathering* again with the plough, and by deepening and rounding the water furrows, and making side cuts towards low or wet spots by means of the plough or spade, this is still more effectually done. These water furrows, of course, all end in a ditch. The breadth of the ditches should vary with the nature of the soil, so as to have more frequent water furrows in clay soils than in light soils. Fifteen or eighteen feet is a medium breadth: in some districts however they are made of the breadth of five or six feet only, while in others they extend to a width of 24 or even 36 feet.

Sheep pastures are sometimes drained by furrows made with the plough along the most favorable slopes, and directed towards a common drain or open ditch, by means of which the water is conveyed out of the field.

Open ditches may vary from two to six feet in depth, and three to four feet in width; and their sides should slope at an angle of 45 degrees. These ditches, both large and small, ought to be very frequently looked over and scoured, so as to secure their efficiency.

Deep or *Under Draining*: In looking at the sloping surface of any tract of ground in which there is an oozing or bursting out of water, we may generally distinguish the line where the springs burst by the pressure of the water itself, or by the plants which naturally occur over it: and we ought to fix the line for our head drain at or above the line which connects the greatest number of wet places: it may also be necessary in some cases to draw the water from each side towards the centre, from which point again it is to proceed straight down toward the outlet. The object should always be to cut off the water by as few channels as possible, and this can only be done effectually by digging the ditch deep enough to reach the impervious floor on which the water naturally rests: from this level it is then to be taken downwards as rapidly as possible. It is always well to remember that "one drain well laid to suit the circumstances will often save a dozen by rule."

Peaty or boggy lands are generally dried by a drain which surrounds their margin and cuts off all the springs as they enter the hollow, or by a large main drain and branches aided by deep furrows and high ridges: in such cases however some extra labor may be required so as to secure a proper outfall.

In under draining for springs it is always well to know the nature of the sub-soil by one or two experimental cuttings or pits, or borings in the line of the proposed drain. It is likewise advisable that the drain should if possible always *head* the spring, and that its floor should be impervious to water: in fact, the depth of the impervious stratum will in general determine the depth of the drain itself.

The question of using a plough or a spade in ditching or trenching is in general determined by the state of the ground itself: if the sub soil be full of roots and stones, it is better to use the spade, but if it be free from these obstructions a plough will do the work quickest. Trenching with the spade may go on at any time during the open season, or at any leisure moment when no other work is going on out of doors. Clay land will cut best when it is a little wet, and so in fact will most soils. When a deep drain is filled with stones and covered in, it will be less liable to injury from frost than open drains, whose sides are very apt to crumble and choke up the water course. They may also be made much narrower than open drains, and it is better to make the open area of such drains narrow and deep, as smaller bottoms and covers will suit, and the current of water being more confined, mud and sand will be less apt to settle on the bottom.

The implements required in addition to the plough are a common spade and shovel, a long or very long and narrow spade, a pick-axe or a footpick, a crowbar, a garden line, a level and a gauge, or measuring rod with one or two cross arms.

The general course may be set off by a furrow, or by pins set into the ground, or by raising a bit of turf here and there with the spade, and its width, say 30 inches, set off by a rule and garden line.

The simple and more usual practice is to sink the drain about 3 or 4 feet; the most perfect method is to cut down 5 or six feet, or until the natural flood is reached.

The value of the land, and the means of the farmer will, however, generally determine the question.

In a medium soil a furrow of, say, 30 inches wide, and, say, 12 inches deep may be made between the ridges, and the ground then trenched with the spade. This trench should be as narrow as the man can conveniently work in. Even if the flow of water is to be considerable it need not exceed 18 inches in width at the bottom, and that when the excavation is 6 feet deep. In the case of drains of considerable width, a pipe or conduit of about 6 inches wide is made with dry, flat stones, for the bottom, top and sides; on these ordinary stones are to be put, keeping the larger ones underneath and the smaller ones above, to a depth of about 18 inches from the surface: the inverted sod is laid over the levelled surface of the stones, and the earth filled in as quickly as possible, leaving it slightly elevated at the surface to allow for settling.

When the attempt is not made to reach the deep seated water as above, but rather to catch the water near the surface as it stagnates or slowly filters through a close subsoil, a furrow may be formed with the plough as above, and then a trench cut with a narrow spade, which shall be 20 to 30 inches deep, 8 inches wide at the top and 6 inches wide at the bottom. Next, lay two large flag-stones in the bottom of the trench so that their sides shall be supported by the soil and their edges meet along the bottom: then introduce a large stone which shall wedge them steadily against the land and leave a conduit underneath; the rest of the trench may be filled up again with small stones or gravel, and covered over with the inverted sod and soil.

The general rule in all cases is to dig from the lower end of the field upwards—to prove the levels—and to fill in from the upper end.

When flat stones cannot be had in quantity for the purpose, two round stones may be laid in the bottom and a flat one or another round one laid on top of them.

The above system of cutting off water along the side of the declivity just where the springs burst out, is a most important one, and in very many cases prevents the necessity of any other kind of grain.

Sub soil or *Thorough Draining*:—We shall now make some observations upon sub-soil draining, or the removal of stagnant and concealed rain water from the soil and sub-soil by numerous and narrow parallel covered drains in each furrow, or in each second furrow, communicating with a lower drain which discharges the waters of the field.

The first thing is to determine the line of the main drain into which the branch drains are to enter; the course of that drain is always along the lowest side of the field wherever that may be: If there should be two or three different slopes in the field there will be required a corresponding number of main drains communicating finally with the grand outlet. If the field is very flat, this main drain must be dug a few inches lower than the branch drains. Wherever the course of the main drain will allow of it, these branch drains should follow the inclination of the ground up and down, and not obliquely across its surface. If the main drain runs up and down a hollow field, the branch drain must then run obliquely and join the former at an acute angle; but as a general rule drains are most efficient when they run directly down the fall of the field and not across.

The depth of the branch drains depends upon the nature of the soil, and the quantity of water which lodges. In a medium or loamy soil a depth of about four feet, and intervals of about thirty six feet are recommended; the regular distances secure uniformity of dryness. It is almost as bad to have one part of a field wet as the whole. When this kind of draining is undertaken, it ought to be done effectually, and it is considered to be better economy in England to drain one half of a farm thoroughly, than to have the whole of it half drained only. Deep drains will always draw most water, and they are the best secured from injury by frost; they are the most effectual and most durable.

In large undertakings, says Thaer, it is customary to make use of a plough for the purpose of commencing the opening of a drain. Two furrow slices are thrown off by this implement, the one to the right and the other to the left, while a strip of earth about fifteen inches wide is left between the furrows.

This strip is subsequently divided with a strong plough having a double mould board. The first time the instrument passes through the soil, it is made to penetrate to the depth of about a foot, and the second time it is arranged so as to turn up the soil to at least six or eight inches lower down: the earth is immediately removed from the sides, lest it should fall back again into the ditch during the operation: the excavation is then continued with manual implements, and it is almost always better to work up hill than in a contrary direction. A common spade is first made use of which is a little narrower at the bottom than it is at the top, and subsequently another is had recourse to, the upper part of which is scarcely so wide as the lower part of the former, and its extremity not more than three inches wide. By digging successively with these two implements, and exercising a little care and skill, the drain will speedily become properly shaped: the walls must then be united, and all the loose earth which has fallen to the bottom removed thence with a curved shovel.

Such narrow openings are intended for tile or tube drains, but when stones are to be used for filling, Stephens recommends that the bottom of the main drain should be 24 inches wide at the top, and 9 inches or the width of a spade. The places where the side drains are to enter should be marked off, and their outlets cut to the proper depth.

The main drain is then to be filled and covered, and the side drains cut from below upwards: a small drain should likewise connect the tops of the others at the upper side of the field.

Each of the drains should be cut throughout and gauged and levelled before filling in.

If stones are to be used, the bottom of the branch drains should be seven inches in width: the main drains ought to be made with a pipe, and the side drains with stones alone. Mr Smith says that a drain ten inches wide and eighteen inches deep will void the rain water from 100 acres.

The best form of a stone pipe is that of a triangle; if its base be downwards, the water will be less likely to run through, and if the apex of the triangle be turned downwards, the drain will clear itself better, though the water may escape downwards to a certain extent.

The fall required is not very great; 1 in 300 or less will suffice.

The sides of the pipe are to be made with flat stones, and then supported with roundish pieces about the size of an egg, or not larger than three inches in any one direction: these stones are to be filled in evenly to a depth of —say eighteen inches from the bottom of the drain. The upper layer may be of clean gravel from a brook or sea beach. The stones ought to be beaten or rammed down hard and their surface levelled, after which nothing more is required than to fill in the earth and finish off as usual.

In all kinds of covered drains it is of the utmost consequence that the ends should be looked over from time to time, and accumulations of mud and sludge removed. *This ought never to be forgotten.*

A PAWNBROKER TAKEN IN.—Last week a cunning rogue went into the shop of a pawnbroker in this town with two bundles, so correctly made up and tied that the one could not be distinguished from the other, and professed that they were coats which he was desired to pawn. The pawnbroker unloosed and examined one of the bundles, and found it a really good coat, and offered so much upon it. Some higgling took place on the amount offered, during which time it was