THE GLEANER:

AND NORTHUMBERLAND, KENT, GLOUCESTER AND RESTIGOUCHE

COMMERCIAL AND AGRICULTURAL JOURNAL.

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 Exhibition and Ploughing Match.

The Shediac District Agricultural Society have agreed to hold an *Exhibition and Ploughing Match*, on the *last Thursday* in October next, when the following Premiums will be awarded, confined to members of the Society who have paid up their subscriptions on or before the 30th day of August, 1851.

Best aged Bull,	0	15	0
second best do	0	10	0
best milch Cow, which had a calf the past spring,	0	15	0
second best do	0	10	0
best Heifer, from 1 to 3 years old	0	7	6
second best do	0	5	0
best aged Ram	0	10	0
second best do	0	7	6
best pair of Ewes	0	10	0
second best do	0	7	6
best Boar	0	10	0
second best do	0	7	6
best Sow	0	10	0
second best do	0	7	6
best brood Mare, with a Colt	1	0	0
best year old Colt or Filly	0	10	0
best sample of Butter, not less than 20 lbs	0	10	0
second best do	0	7	6
third best do	0	5	0
best roll or printed Butter, not less than 5 lbs	0	5	0
second best do	0	4	0
best four Cheeses	0	12	6
second best do	0	10	0
best two bushels of Red Wheat	0	7	6
second best do	0	6	3
third best do	0	5	0
best two bushels White Wheat	0	7	6
second best do	0	6	3
third best do	0	5	0
best two bushels Black Oats	0	7	6
second best do	0	6	3
third best do	0	5	0
best two bushels White Oats	0	7	6
second best do	0	6	3
third best do	0	5	0
best bushel of Timothy Seed	0	15	0
second best do	0	10	0
third best do	0	7	6
best bushel of Rye	0	6	3
second best do	0	5	3
best bushel of Buckwheat	0	6	0
second best do (not gravelly)	0	5	0
best bushel of Indian Corn	0	5	0
second best do	0	4	0
best bushel of Barley	0	5	0
second best do	0	4	0
best bushel Carrots	0	5	0
best bushel Beets	0	5	0
best twelve heads of Cabbage	0	5	0
best bushel of Onions	0	5	0
best quarter of an acre of Turnips	1	0	0
second best do	0	15	0
third best do	0	10	0
fourth best do	0	7	6
best 6 yards Homespun, all wool, twilled,	0	10	0
six yards do do striped	0	10	0
best six yards, wool and cotton, plain or twilled	0	7	6
best six yards do striped	0	7	6
best six pairs of Socks, all wool	0	5	0
best six pairs of Mitts	0	5	0
best ten yards Linen	0	7	6

PLOUGHING MATCH.

First Prize	£1	10	0
Second Prize	1	5	0
Third Prize	1	0	0
Fourth Prize	0	15	0
Fifth Prize	0	12	6
Sixth Prize	0	10	0
Total,	£30	2	0

Judges of Grain, &c.—John Robb, John Chapman, and James Sims, Esquires.

Judges of Ploughing and Cattle—Joseph Avard, John G. G. Layton, and Thomas F. Arsineau, Esquires.

H. LIVINGSTON. President
Shediac District Agricultural Society.

G. S. JARVIS, D.D., Secretary S.D.A.S.

Agricultural Journal.

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 September 1.

Wet soils are not elastic: the air condensed on pressure does not cause them to spring up again after the foot of an animal has trod upon them, their track remains indented in the soil, and soon a poachy hollow appears.

Clay lands become sticky and hold the plough and the cattle as they pass over it—and wet lands are very appropriately termed *heavy lands*. Such lands, whether moist, or dry and baked, must keep the water at the surface and the air too,—conditions which are unfavorable for vegetation—they never can become *mellow*: but if they are properly drained, they crack and crumble up, yet still retain the food of plants, that is, the manure—much better than the hungry soils of sand or gravel.

In well drained lands the plough passes more easily, and raises a deeper furrow slice, the harrows move more smoothly, and all the operations on the soil are executed with less labor and less strain of the cattle and implements.

On the whole, then, it is sufficiently obvious that the Farmer can get sooner on to well-drained lands to plough and sow them in the spring—that all the operations of tillage can be performed more smoothly and thoroughly—that the crops can seek their food over a greater extent of available soil—that they will grow more healthily and more rapidly during the summer—and that there will be a better chance for ploughing and other field-work in the autumn; in short, that time for preparing the land for the crops, and time for the growth of the crops themselves, may be gained by a well-considered system of drainage.

We shall now inquire into the sources of the water which is found in the soil, and which it is the object of the farmer to get rid of by draining.

All the water of rivers, lakes, springs and subterranean channels comes from the sky, into which it had passed by evaporation from the surface of the sea or land some time before.

The quantity of water which falls upon any given surface depends chiefly upon the latitude of the place or its distance from the equator. Within the tropics the greatest quantity is evaporated, and within the tropics the largest quantity is condensed.

It is estimated that the annual fall of water over the surface of this Province amounts to about 40 inches: that is, if all the water which falls in the course of a year upon any single square foot of our land was to be allowed to accumulate, at the end of a year it would form a column more than three feet high. In England, where the ground is but little frozen during the winter, most of the water which falls from the heavens sinks directly downwards, but in this country it accumulates during winter as snow, and in spring, great part of the winter's accumulation flows down over the frozen surface towards the brooks and lower levels, without soaking so much through the soil. This different state of matters must be borne in mind in trying to estimate the amount of water to be got rid of by artificial drainage.

But what comes of all the summer water?

Some of it rises upwards at once into the sky again as vapor, and another portion of it runs *over* the surface towards lower levels, the rest sinks *under* the surface, and, of course, tends towards lower levels also—that is, chiefly towards the rivers which are the great *natural* drains of the country.

Of that which passes below the surface, one part is soaked up and retained in the soil or between the arable soil and the sub-soil, where, in a very great many cases, it remains in a more or less stagnant condition; another part of it sinks through the sand and gravel till it comes to a deeper bed of clay, or other impervious material, on which it rests as in a *pan*, or over which it flows as far as the slope will permit.

If the clay bed ends or *crops out* on a side hill, the water either appears as a living spring, or diffuses itself far and wide through a leachy or boggy soil.

If again the clay bed should form a sort of hollow, or bowl shaped cavity, the water will give rise to a marsh which will overflow at certain seasons and become wholly dry at others.

If the downward flow of the water over clay or concrete gravel is interrupted by a boulder or rock, the water will come to its upper surface and give rise to a spring there.

Again—the bed of clay may end abruptly, and the water falling on sand will sink down a stage lower, till it meets another layer of clay, or a surface of rock, over which it will flow and give rise to the same effects—only at lower levels: or it may get between the edges of inclined layers of rocks—or it may enter some of their massy cracks or joints, within which it will move, ever tending downwards, until these impervious beds end on a side hill, or the channel is obstructed by some obstacle—in either of which cases the water will be forced upwards by the pressure from behind, and form a permanent swamp, or spring, or pond, or lake, according to the quantity of water which is thus collected. If there be no sufficient outlet in this way, the water between the rocky strata, (which are seldom or never perfectly level), will sink to the lowest points, perhaps a thousand feet below the surface, and there form vast subterranean reservoirs—which may be tapped, if necessary, and supply what are called Artesian Wells.

Water which has passed for considerable distances over sand or clay or rock leaves behind it most of the surface impurities, while at the same time it is kept cool by the mass of overlying materials, and thus affords at all times a grateful and refreshing supply for the uses of man and animals.

Attention to the foregoing remarks, and a little judicious exploring with a spade or crowbar, together with some observations on the nature of the plants growing at the surface, will enable any intelligent farmer to discriminate as to the particular sources of the water which he purposes to get rid of, and to the line or lines which he ought to select for his proposed drains.

Before proceeding to drain any particular field, it is always proper to examine the soil for water plants, (moss, *negro hair*, &c.,) and to sink little pits from three to five feet deep, so as to become sure of the nature of the sub-soil: if the sub-soil is open and porous, so that water passes freely down, that is a natural drain, and there is no occasion for any artificial excavation—but very generally this is not the case, and springs not only show themselves at the surface, but the sub-soil is permanently charged with concealed and stagnant water also.

Deep ploughing in some cases will serve to break up the *pan* or retentive layer of the sub-soil, and allow rain water to sink until it reaches a porous substratum which will carry off the water; but this is a point which can only be determined by some experimental cuttings or pits in the fields themselves.

If the disadvantages of wet lands have been sufficiently appreciated by the farmer, he will immediately proceed to seek for a remedy. This is to be secured by catching the water as near its source or head as possible, and then confining it in narrow channels, by which it will flow downwards out of the field, instead of spreading on the surface, or being diffused through the soil, or forming a subterranean reservoir of water in which the soil of the field rests like a sponge in a basin full of water. Such artificial channels or conduits are called drains or ditches.

Surface Drains are required for the removal of such water as flows over the surface merely. *Deep* or *under Drains* are for collecting such large bodies of water as are found in isolated places in connection with springs properly so called. *Sub-soil* or *Thorough Draining* is had recourse to for the purpose of getting rid of such water as remains in a concealed or stagnant condition, (generally in heavy soils, or in level places,) within the sub-soil, or between the mould stirred by the plough and the sub-soil.

Surface draining has been practised from the earliest times: under-draining, or the cutting off of springs at their sources, is a more modern improvement, proposed by Mr Elkington in the year 1764; but Mr. Smith, of Deanston, in the year 1831, first demonstrated the great evil of stagnant rain water in the soil unconnected with springs, and the return of water upwards from the sub-soil to the soil—and proposed a system of drainage by means of covered drains in each furrow, which should immediately and effectually carry off that portion of the rain water which sinks through the soil. Rain water, it was shown, should always be encouraged to sink down and flow *through* but not *over* the surface of arable land. This constant movement of rain water through the soil, as he observed, is most effectually secured by deep tillage and his system of thorough draining.

The use of Elkington's system of under-draining then is to get rid of spring water principally and mainly, though, of course, every drain will remove some of the surface water, and there are many soils which, when under-drained, become dry enough without thorough draining. The object should always be to do as much as possible by a single drain, or system of drains, as one good one properly laid down may dry a whole field.

When the wetness is connected both with spring water and stagnant rain water, especially in close soils, both kinds of drains may be required to produce the desired result. It is essential then that every farmer should come to clear conclusions as to whether the wetness of his fields proceeds from one or other, or from both together, and as to whether the profit on the proposed improvements will cover the necessary expenditure.

There is a great deal of vague information abroad in regard to "thorough draining" (so called), and it has perhaps been too indiscriminately recommended in this country. By attention to the foregoing remarks it will be seen whether the latter more expensive process is required or not.

The absolute necessity of the two first mentioned kinds of draining is readily admitted, but the adoption of thorough draining must be an affair of time and means. It has hardly been introduced as yet among us, and we want information as to its profit and loss derived from the experience of our own country. For the purpose of inducing farmers to test the utility of thorough draining, the Directors of the St. John Agricultural Society have offered premiums to such as would undertake the experiment, and report upon the result, and a drain-tile machine has been imported and set up with a view to supply the necessary material. It must be remembered, that in England tile-draining is done at less than half the cost of stone draining, even when stone is on the land, and is more effective. The former costs, in England, from £3 to £6 per acre, with drains 3 to 5 feet deep, and 20 to 40 feet apart: the latter from £10 to £30.

It is also well known that the highest authorities in Great Britain agree in the opinion that the growth of crops in that country is more retarded by the pestilential influences of rain water and melted snow remaining within a retentive sub-soil, than from surface