

# 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.*

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## Agricultural Journal.

From the Quarterly Journal of Agriculture.

### ON THE FORMATION OF MANURE-HEAPS AND THE ECONOMIZING OF LIQUID MANURES.

BY MR. T. ROWLANDSON, LIVERPOOL.

By some or more of the preceding methods we are enabled to prevent the escape of the whole of the volatile and fixed salts which form the most valuable components of our manure-heaps—by keeping the same in pits we prevent the excess of moisture, which frequently contains the richest ingredients (though not in a state adapted to promote the growth of plants) from escaping.

When cattle are fed on green food, a considerable quantity of urine is voided by them, which it is of much importance to the farmer should not be wasted. Urine, on the average contains 95 per cent. of water, but the remaining 5 per cent. contains more nitrogen than 100 parts of ordinary farm-yard manure, the remainder consisting of the phosphates and sulphates of lime, magnesia, potash, and soda. I have recommended, in a previous part of this paper, that all the urine from the offices should be conveyed to the dung-pits through tunnels, and no extra moisture should be admitted where cattle fed on green food greatly preponderate in proportional numbers. In house and other fed cattle, it is probably that so large a quantity of moisture being present in the pit will have an injurious tendency. When such is the case, it would be easy to sink a small tank or well adjacent to the dung-pit, and connected by a tunnel the tank of course being somewhat below the level of the bottom of the dung-pit. In this mode the liquid may be allowed to putrify, in which state it is always found more efficacious, and would, at the same time, serve to moisten the dung-pit, if such should at any time be deemed necessary. Were dissolved bones used, as I have previously described, to neutralize the humic acid and humates, it could not fail to render the liquid oozing from such pits most valuable. These are merely suggestions thrown out for practical persons to avail themselves of; for, if such are convinced of the correctness of the general principle, they will easily, with only a slight exercise of ingenuity, devise means of carrying out the plan in a practical manner.

To those who have not the convenience for collecting or distributing liquid manures, I beg leave to offer the following suggestions:—Whenever peat earth is available, let a quantity of this be made into compost with lime, about twenty loads of peat to one of lime, and throw this compost into the bottom of the pits until it is about one or two feet thick, as maybe thought most judicious; in the absence of peat, ditch scrapings might be used. In the agriculture of this country, liquid manure is best applied to grass lands, or young corn, immediately after it has been rolled, and ought, if possible, to be applied in dropping or dull weather. In conclusion, I may observe that I cordially agree with C. W. Johnston, Esq., that "the watery matters, to which in England the name of liquid manures is very often erroneously applied, consist of hardly anything else but a little discoloured water." The remark is true, and is doubtless the reason why liquid manures have so little reputation in this country.

I cannot conclude this paper without adverting to the fact that no writer has ever investigated the reasons why, under certain circumstances, humic acid is formed, as in peat mosses, whilst on fertile lands, which yield considerably greater amounts of vegetable matters on equal spaces annually, vegetable matter or humic acid does not accumulate. Whilst investigating the action of alkalies with humic acid, I was rather struck with some changes that took place, which I think will throw some light on the subject, and which I intended to reserve for an article on the formation of soils.

A paragraph has gone the round of the papers, to the effect that Liebig has dis-

covered a mineral substances which, mixed with guano, will produce the most surprising fertility; and it states farther, that a company has been formed, with upwards of £100,000 capital, to carry the invention into effect. I know of no mineral, in the present state of chemical knowledge which is likely to produce such powerful effects as described, unless it be one containing potash in abundance. Fuch has stated that he has obtained as much as 18 or 20 per cent. of potash from the potash felspars. If some of the felspars, which are much mixed with pyrites and pyritous shales, were burned, and then slaked, very probably decomposition might take place—sulphate of potash, potash, and oxide of iron being produced. The shales of our coal measures are said to contain considerable quantities of potash. Free potash, or its carbonate, applied to a dung-pit, formed as I have stated, and the humic acid of which should be neutralized by the use of bones dissolved in muriatic acid, would produce fertilizing effects in the most surprising degree. It is the constant waste of the potash from our fields that they to so great a degree owe their exhausted nature. I should feel obliged if any one of the readers of this journal could conveniently forward me a few specimens of felspathic potash minerals from places where these are produced in abundance. If an economical mode could be discovered of extracting the potash, or converting these minerals into such compounds as might be available to the farmer, it would be one of the greatest boons that could be conferred on the British agriculturist.

### CLASSIFICATION OF SOILS.

From Law's Translation of Boussingault's Work on Rural Economy.

Agriculturists class soils according to their fertility, and the cropping which they will stand to advantage. In practice, two grand divisions have been adopted: *strong* soils, and *light* soils. Every soil belongs wholly or in part to one or other of these divisions.

In strong soils clay is the predominating element: in light soils it is sand which prevails. Humus always adds to the qualities of these two kinds of soil, though possessed of properties so opposite; but its utility is especially remarkable in argillaceous or clayey soils, the extreme stiffness of which it diminishes.

Stiff or strong soils share in the advantages and disadvantages peculiar to clay; they absorb a great deal of moisture, and they do not dry readily, retaining obstinately a considerable quantity of water. The humus which they contain, and the manures which are spread upon them in the course of cultivation, remain with them for a long time, preserved, as it were, from the too active agency of atmospheric influence. The fertilizing power of these substances is further rarely interfered with by too great a degree of dryness of soil: nevertheless, in very wet seasons, and in years of extraordinary drought, the advantages which I have enumerated disappear. In wet seasons clay lands become immoderately humid; sometime they approach the state of mere puddle; and on the contrary, under severe and long continued drought they become so hard that the roots of vegetables can no longer penetrate them, and then they crack in all directions, and the roots perish for want of being properly covered. I might add that severe frost is the cause of effects disadvantageous in the same degree; so that very stiff clays are liable to the same bad effects under the influence of two causes diametrically opposed—the great heat of summer and the severe cold of winter. In such soils all agricultural operations are often impracticable; changed into a liquid mud, neither horse nor plough can be put upon them; or baked into a mass having the hardness of stone, the share will not penetrate them. Light soils rarely accumulate an excess of moisture in their interstices, so that they are liable to suffer under want of rain of even short continuance. They are worked with infinitely greater ease, and at much less expence: vegetation upon them is quicker, and har-

vests earlier; but manure is less profitable than in clayey soils because the rains dissolve and carry it away.

The defects of these two kinds of soils are precisely of a nature to compensate one another; and it is, in fact, by a mixture, or that which is equivalent to a mixture of these two extreme kinds of soils, that those lands are formed which are admitted to be the best adapted to cultivation, and the most fertile of all. Messrs. Thær and Einhoff, in submitting to mechanical analysis an immense number of arable soils, and in studying, at the same time, the system of culture best adapted to these soils and to their relative fertilities, have given us results of great importance, and which may be made the basis of a practical classification of arable soils.

An argillaceous or clayey soil, properly so called, generally contains about 40 per cent. of sand. If the quantity of sand be less than this, the crop from such a soil will be more or less precarious, and the tenacity will be such that considerable difficulty will be experienced, and necessary expense incurred, in working it. Such a clayey soil (having at least 40 per cent. of sand) when it contains a sufficient quantity of humus and is properly treated, may be regarded as favourable for wheat. Barley succeeds better than wheat when the quantity of sand is as low as 30 per cent. With less than 30 per cent. oats will thrive. Wheat may still be advantageously cultivated upon lands that contain from 40 to 50 per cent. of sand; beyond this term, when the soil contains from 50 to 60 per cent. of sand, it is more advantageous to grow barley. Such a soil will not be completely pulverized by reiterated ploughing as will that which contains a larger proportion of siliceous matter; and it does not become hard and cracked under drought like lands that are more essentially clayey, because it retains a sufficiency of moisture: it is equally well adapted for trefoil of all kinds, for tubers, for plants with tap roots, and for many other crops of great marketable value, such as cabbage, flax, tobacco, &c. It is almost always accessible—a circumstance which allows of the greatest care being bestowed upon the crops which are raised upon it. In soils which yield, on washing, from 60 to 80 per cent. of sand, we cannot reckon securely on the success of wheat. At 70 of sand, it ceases to be well adapted to the cultivation of this grain, except with especial precautions; but it is still well adapted to barely, and it is in such a soil especially that rye succeeds best.

Land with such a dose of sand is always easily laboured; but it is more apt to be overrun by foul weeds than a soil that is decidedly argillaceous. Manures are speedily consumed in it, for the reason already given: it is, therefore, advantageous to manure such land frequently, laying on less dung at a time.

A soil having 75 per cent. of sand is qualified by Thær as an oat soil; and even up to 85 per cent. of sand it may be regarded as suitable to this grain: this term passed, nothing but rye or buckwheat ought to be sown upon it, and that only after it has had a sufficient dose of manure. The reiterated ploughings which some of these sandy soils require, to get rid of the foul weeds which rush up in such quantities upon them, sometimes render them so open that rye will not succeed. The best course is then to lay them down in grass, and allow them to become consolidated rest.

It is extremely difficult—at least, in this climate of ours—to make anything of soils that contain 90 per cent. of sand; in times of drought they become truly moving sands. As we have already shown, calcareous matter may replace siliceous sand in the part which it plays in an arable soil; like sand, calcareous matter tends to destroy the strong cohesion of the particles of clay; but it appears that chalk of lime, especially when it is in a state of minute subdivision, besides this effect, really contributes to the amelioration of wheat lands.

## Provincial Legislature.

New Brunswick.

### JOURNALS OF THE ASSEMBLY.

February 4.

Mr Rankin presented a petition from Daniel Keith, Wm. Johnston, Caleb McCulley, and 16 others, Firemen for the town of Chatham, praying for an amendment of the Laws now in force for the appointment of Firewards and the better extinguishing of Fires at that place. Laid on the table.

Mr Rankin moved for leave to bring in a Bill to repeal the Laws now in force for the appointing Firewards and the better extinguishing of Fires, so far as the same relate to the Towns of Newcastle and Chatham, and to make regulations more suitable for the said Towns, and for other purposes therein mentioned. The said bill was read a first time.

Mr Rankin likewise moved for leave to bring in a Bill to prevent the performance of statute labour on Highways in the parish of Newcastle, by substitute. The said bill was read a first time.

Mr End presented a petition from W. Napier, Francis Ferguson, and ninety two others, inhabitants of the County of Gloucester, praying for a special grant of money to raise the Bridge at Blackstock's Mills, in that county. Upon the question that the petition be received, it was decided in the negative.

February 5.

Read a second time the following Bills:—a bill to prevent Horses and Neat Cattle from going at large on the low lands on certain parts of Big Bartibog river, in the county of Northumberland. A bill to prevent the performance of statute labour on Highways in the parish of Newcastle, by substitute. A bill to authorize Her Majesty's Justices of the Peace of the county of Gloucester to assess the said county, for payment of the county debts. A bill to authorize Her Majesty's Justices of the Peace, for the county of Northumberland to assess the said county to pay off the county debts; and a bill relating to mill reserves.

Read a third time as engrossed, a bill to authorize the Justices of the Peace for the county of Restigouche to levy an assessment to pay off the county debt. A bill to continue an act, intitled 'an act relating to the collection of duty on Timber and other Lumber.' A bill to provide for the management of the Temporalities of the Church of England in this province. That the Bills do pass.

A MESSAGE FROM THE LIEUTENANT GOVERNOR.

The documents accompanying this message, being read at the Clerk's Table, are as follow: OFFICE OF PROVINCIAL SECRETARY.

Extract of a Despatch from Lord Stanley to Sir Wm. Colebrooke, dated Downing Street, January 21, 1845.

I have received your despatch, No 88, of the 27th December last, reporting the death of Mr Odell, the Provincial Secretary, and clerk of the Executive Council of New Brunswick, and the provisional arrangements which you have made for the performance of the duties of those offices.

I shall, of course, suspend my decision as to the final disposal of these offices, until I shall be in possession of the further report which you lead me to expect by the February mail. (Signed) STANLEY.

Extract of a Despatch from Lord Stanley to the Lieutenant Governor, dated Downing Street, March 31, 1845.

In your despatch No 88, of the 27th December, you apprised me of the death of Mr Odell, and of the provisional appointments which you had made, adding, that you intended to consult with your Executive Council as to the 'arrangements for the future regulation of these important offices.' My reply of the 21st of January suspended any final decision until I should receive your promised report on the subject.

Lord Glenelg's despatches to the Earl of Gosford of the 17th of July, 1835, and of the 5th of December of the same year, to Sir F. Head, laid down explicitly as a general rule, that public employments in Canada were to be bestowed on natives or settled inhabitants of the province; and Lord Glenelg, on the 31st of August, 1836, instructed the Lieutenant Governor of New Brunswick to give to the Assembly an assurance, which they desired, that the principle laid down in the instructions to Sir Francis Head should be extended to the province.

Although Mr Reade has now been for some time in the Province, and has been employed by you in highly confidential situations, I cannot think that he can be considered to come under the denomination of a 'settled inhabitant of the Province.'