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.

NEW SERIES, VOL. VI:] MIRAMICHI, TUESDAY EVENING, OCTOBER 19, 1847. [NUMBER 2.

Agricultural Journal.

From the London Farmers' Magazine.

THE LONDON FARMER'S CLUB.

SUBJECT—"THE ACTION OF CHEMICAL MANURES, AND THE BEST METHOD OF MAKING FARM-YARD DUNG.

The monthly meeting of the London Farmers' Club took place at the Club-House, Blackfriars, on Monday, April 12, having been posponed on the previous week, on account of the Easter holidays the subject appointed for discussion was "The action of Chemical Manures, and the best method of making Farm-yard Dung."

Mr. NESMIT rose and said: Mr. Chairman and Gentlemen, It is with very great pleasure that I rise this evening to bring under your notice a subject which you will all agree with me is one of the most important that can be brought under the consideration of the agricultural world. You will give me leave, however, to change the form of the notice, and instead of commencing with the action of chemical manures, to begin with farm-yard dung. Allow me to say, before I proceed, that the inquiry into this subject cannot be conducted properly by any scientific man by myself, or by any scientific men by themselves, or by any practical men acting alone; there is required a union of science and practice in order that the matter may be fully understood; scientific men and practical men must bring their knowledge to bear equally in order to get at the truth. Now, it has been known for ages that the refuse of vegetables and the excrements of animals, when applied to the land, have given it increased productive power; that is to say, that land which would only produce a certain limited crop in its existing state, would produce an increased amount of crop if certain vegetable substances or animal excrements were applied. Now, this is what is called manuring. The fact has been perfectly well known that these substances do act beneficially in the vegetable world. But the question is, why and how they do so. I want to attempt first to illustrate these points, and then afterwards to show what are the best means of preparing all these animal and vegetable substances for the reproduction of vegetable life. You will observe that all substances derived from the vegetable kingdom will, when exposed to moisture, decompose; a certain action takes place, and these bodies decompose and lessen in weight. This action goes on, not only in the case of moist hay and straw, but also in that of wood. While this action proceeds, which is caused by the union of oxygen of the air with the carbon and hydrogen of the vegetable fibre, these substances are sent into the air in the form of carbonic acid and water. If you take a quantity of hay, you will find that by the slow and gradual action of the air heat is generated, and if it be left in that state, the gradual increase of the heat will cause it to burst into a flame. Now, the making manures with vegetable matters differs not from this action, except that you never allow the action to rise so high as to cause inflamatory effects. You arrest the action by keeping out the air; and the substances thus produced will, weight for weight, be of greater value for manure than the vegetable substances of which they are made. I think I shall be able to show you that a similar effect is produced in a similar action in the case of the excrements of animals. In the case of animals which eat vegetable substances—for instance, sheep or oxen—a certain amount of vegetable matter is taken into the system. If it be a full grown animal, the chief action that takes place is that a portion of the food is consumed by the oxygen of the air taken in by the lungs, and this for the purpose of producieg animal heat. You are aware that animals always have a temperature many degrees above that of the air in which they live. For many years it was a problem how this temperature was produced; but recent experiments have proved that it is by the consumption of food, that exactly as common wood consumed in a fire-gate produces heat, so a portion of the food taken by the animal produces that heat which is necessary for the proper performance of the animal functions. Now, you will observe that in the previous case which I have mentioned, the oxygen of the air acting on most vegetable substances produces the same effect, carbonic acid and water being equally found in the exhaltation from manure heaps, the air in the chimney, or the expired breath of an animal. It is not necessary for me to tell you all the variety of effects which are produced in the animal system by the digestion of the food, but the result is that the excrements contain the whole of the mineral elements, but a lessened amount of the nitrogen, carbon, and hydrogen of the vegetable matter, in heap by itself, and the passing of sisimilar matter through the bodies of animals, and becoming their excrements both liquid and solid. Now these excrements of animals and this decomposed vegetable matter have ever been found beneficial to the land. Suppose we take a crop of tares or a crop of wheat; here is a crop which has grown in the land, which has seized hold of mineral matters and has taken its potash, soda, lime, phosphoric acid, and other substances which it requires; it has taken from air and water its carbon and nitrogen, and its hydrogen and oygen. This crop, when decomposed into a manure, will by the operation lose a portion of its organic matter; and if there be no washing away it will loose nothing else. The consequence is, that when you put this decomposed vegetable matter back on land from which you desire to grow new vegetable matter, you put back nearly the same substances which the vegetables had taken before, and had shown to be essential to their existence; and these you restore, in order to provide for the existence of new plants. It is the same with food given to animals. When you give food to animals the carbon and hydrogen are liberated by the action of the oxygen of the air in the system. The other matters, nearly the whole of the nitrogen, the rest of the carbon, and the hydrogen, and the whole of the mineral matters, are given out in the liquid and solid excrements—the soluble in the liquid, the insoluble in the solid excrements. If, indeed, the animals be fattening, a certain portion will be taken in that way; and you must deduct so much more on that account; but otherwise you would have nearly the whole given back again, after deducting the amount of carbon and hydrogen given out in the form of respiration. You willl see at once, then, that it is from the vegetable kingdom itself that you derive all those manures which are so usefully applied to reproduce vegetable life. It is necessary now to consider the nature of those elementary substances of which vegetables are found to consist. We shall then know what elementary bodies are essential to vegetable life. The substances found in vegetables are divided into two varieties. If you take a quantity of any vegetable matter, and burn it, a certain portion will go into the air—that portion is called organic; whilst another portion, which is left, is called inorganic. The inorganic is that portion which is taken from the land; while the organic is that of which the chief part was taken from the air, either by the plant which you have burnt, or by a previous plant. It is well that we should clearly understand the terms *organic* and *inorganic*. I am lecturing to you as if you were schoolboys, and my reason for doing so is that all present may understand the matter; though, no doubt, many gentlemen in this room are well acquainted with this subject. I would say, then, that the inorganic matters are mineral matters, and that the organic are those which can be burnt out by red heat. Of the inorganic matters, there are eight or ten. We have lime, with which every body is familar, we have soda, contained in salt we have potash, found in wood in ashes; we have sulphuric acid, or common oil of vitrol, which is found in the soil in