

THE GLEANER.

AND NORTHUMBERLAND, KENT, GLOUCESTER, AND RESTIGOUCHE
COMMERCIAL AND AGRICULTURAL JOURNAL.

New Series, Vol. III.

Nec araneorum sane textus ideo melior, quia ex se fila gignunt, nec roster vilior quia ex alienis libamus ut apes.

No. 5.

Miramichi, Saturday Afternoon, November 9, 1844.

Agricultural Journal.

LECTURE.

Delivered by Professor Johnson, before the Highland Society, at a late meeting in Edinburgh.

Professor Johnson commenced the lecture by observing, that an impression had long existed in the minds of many persons connected with agriculture, that various departments of science, particularly chemistry and geology, were capable of being applied to it in such a way as to improve the cultivation of the land. But the difficulty was for such persons to answer distinctly the question which was frequently put by practical agriculturists. What can science do for agriculture? Now he appeared there to endeavour to answer that question. Science may impart a practical money benefit to the cultivation of the land, either by enabling farmers to raise larger crops with more certainty and of better quality, or by teaching them how land, previously of little value, may be made capable of raising better crops, which crops again will tend to produce a greater quantity of production of another description, that is, beef and mutton. In illustration of the subject which he had chosen for his lecture, a multitude of subjects presented themselves, and the difficulty was how to select a number of topics which were connected together in their nature, and might be bound up by their common form in their memories. Perhaps the best course for him to follow with such an object would be to take up the seed when it is first put into the ground, and to follow it through its different processes of development till it arrived at maturity. With regard to the selection of seeds they were all aware what an important matter it was, and how much depended upon it; but it was only chemists who could understand the scientific causes of these differences. They also knew that seeds would grow on one kind of soil, while they refused another kind; now the reason of this could only be cleared up by chemical examination of the soil and of the seed. It was a common practice to steep the seed before it was sown, for the purpose of destroying the eggs of minute insects, which injured the plant as they grew up. That might be one effect; but another effect of the steeping was chemical; and that effect was seen in the great luxuriance of the crop. When the seed was put into the ground, it sent forth a little sprout in its germination. Connected with that there was a beautiful chemical process. It must be understood that there were two substances which were important parts in the composition of every plant—sugar or starch, and gluten or albumen. Both of these were in the seed in a solid state; but when the plant began to germinate, it was necessary that these substances should become soluble, to be sent from the seed to the stem. Now it was remarkable, that at the root of every stem, just where it joined to the seed, there was a substance called *clear star*,—and this substance, according to a well-known chemical process, renders the starch and the gluten soluble, and thus enables it to ascend to the stem of the young plant, in proportion as it is required for nourishment. Accordingly along with it, there would always be detected, by a microscope, a portion of the gluten and the starch in a soluble state. So soon as the plant reaches the surface it expands into a leaf. Up to this time, it lives at the expense of the seed; but as soon as it reaches the air, it lives at the expense of the air. All plants require three substances, or rather four—oxygen, hydrogen, nitrogen, and carbon. These substances are only known in the form of gases. After explaining the nature and properties of those gases, he proceeded to say that the plant derived from the air a large portion of carbonic acid; and to obtain that supply, it spread out its leaves in every direction, thus sucking in the carbon from the atmosphere. As there was comparatively only a small portion of carbonic acid in the atmosphere, it

might be supposed that the vegetable kingdom would extract the whole, but by a wise adaptation of Providence which connected together the animal and vegetable kingdoms, it was provided that the same gas which was so greedily inhaled by plants was that which was thrown off as noxious by animals. A full grown healthy man threw off at every breath he took 25 ounces of carbon; a horse and a cow each would throw off about 4lb. so that in this way a constant equilibrium was maintained. Another ingredient in the composition of plants was nitrogen, which existed in large portions in the atmosphere; but the plants did not derive their nitrogen from the air, but rather from the manures applied to them. The knowledge of this fact was of the utmost importance in regard to the application of manures to the soil. Well, the plant had now got above the surface of the ground, and had thrown out its leaves.

At this stage it was usual in many parts of the country—he believed not very common in this district—to apply to what was called a top-dressing. When a crop of oats, beans, or turnips, came up of a sickly character, the farmer sprinkled over it a quantity of common salt, or gypsum, or nitrate of soda, or mixtures of these; and in the course of a single day the plant would appear to be altogether renovated. What was the precise chemical effect produced in this case, they had not yet been able clearly to make out; but they could trace it to some extent. He then mentioned the estates of Mr. Alexander of Southbar, and Mr. Fleming, Barrocham, Renfrewshire, as places where a great effect had been produced by the application of these top-dressings. He then came to turnip. It was necessary for the safety of the turnips, that they should rush up as it were, and throw out their leaves quickly. Now this was a condition of things totally new; and it was only by knowing all the plant required that they could obtain this rapid rushing up of the turnip crop. In connection with this subject, he might mention a curious fact. A farmer could tell by the odour that was exhaled whether the turnips were coming up healthy or not. He (Professor J.) had often endeavoured to detect this odour; but he could not—it required a long experience in practical farming to enable a man to do so. But upon the cause of this odour, so delicate to the sense, chemistry threw a beautiful light. All plants in growing throw off certain substances, which were unnecessary for them at that particular stage. It is that exudation of substances which causes the odours in question; and it is the same principle that causes the odours to delight us so much in the sweet smelling flowers in the garden or the green house. Let them observe what a beautiful arrangement it was, that while Nature, or rather the Lord and Governor of Nature, caused the plant to throw off in a manner which was agreeable and delightful to man; thus even in the most trifling and minute circumstances, providing for our comfort and gratification. Nothing could be more beautiful than the exhibition of the wisdom and beneficence of the Deity, as exhibited in this arrangement. Then, with regard to the proper time for cutting down the crop when ripe, that could only be ascertained by an examination of the straw and other parts. He then referred to the failure of the potatoe crop, and stated it to be the result of very extended observation, that potatoes, when full ripe, contained more starch than albumen, or saline matter, of which three substances, potatoes which contained the largest quantity of starch were those which were most likely to fail; while those containing greater quantities of albumen and saline matter were more likely to succeed. They would farther observe, that if they top-dressed a portion of a field of potatoes with a saline substance, and left the other portion of the field undressed, the latter might prove a failure, while the former would prove an enormous crop. It has been still farther ascertained that if they planted seeds next year taken from the top-dressed potatoes, they would find

their produce much greater than those raised from the undressed portion of the potatoes. It was in this manner they were proceeding; and when they had worked out their operations, he had no fear but they would be able to find a remedy to the failure of the potatoe crop. But it opened up a field which applied to various crops, and would lead them to obtain such a control over it that they could not only increase the quantity, but improve the quality of the produce. He then referred to the ashes of the plants, which remained when their substance was burnt. After giving a history of various chemical opinions which had been held at various times regarding the origin of the matter which composed these ashes, and of their use in the plant, he stated that it had now been ascertained that these ashes contained no fewer than eleven distinct substances—potash, soda, lime, magnesia, &c.—that they existed in different plants, and that all the substances thus presented in the plant must also be presented in the soil, as it was from the soil that the plant derived its supply of this earthy matter. This threw a beautiful light upon the causes why plants would not grow in certain situations; for if a plant required a large proportion of lime, for instance, and there was little or none in the soil, it was clear that the plant would either refuse to grow, or that it would soon exhaust the land. To remedy this it was necessary to supply the deficiencies of the land, so to speak, and to supply lime if lime was wanted. On the other hand, if lime was not wanted, as he believed it was not in this district and in the neighbourhood of Edinburgh, then it was unnecessary, and injurious to the land, to apply lime. He concluded by urging upon farmers to economise their manures, and compensate to the land as much as possible for what was annually carried away by the produce.—*Canadian Agricultural Journal.*

THE POTATOE DISEASE.

A new affliction has befallen us in the partial rotting of the potatoe crop. We feel satisfied that it is only a temporary or accidental occurrence, that may be remedied another year by care and skill. We want new varieties of potatoes, and they should be imported before the next spring if possible, as we very much fear seed cannot be depended upon that is taken from the diseased crop, but of this we cannot speak positively at present. In reference to the rot in the potatoe crop, we should observe that we have carefully examined the stalks or vines, and tubers were rotting and we found worms of the same description in the diseased parts of the potatoes, and minute bugs, that appeared to have burrowed into them. We cannot say, however, these vermin are the cause of the rot in the potatoe crop, or produced by the rot. The very sudden decay of the stalks or vines, without frost, indicated some extraordinary cause, and it is quite possible that the moist warm weather might have produced these vermin that caused the decay of the stalk, and rot of the potatoe; but it is equally possible that the vermin might be produced by the decay of the stalk, and rot of the tubers. We did not examine them sufficiently early after we perceived the decay and rot, to be able to form a very correct opinion on the subject now.

We have seen by our exchange papers, that the disease in potatoes is found to exist in the United States, to as great an extent as with us, and was known there last season. We think it was much the best plan to allow the potatoes to remain in the ground until this time. Those that are affected by the disease will now be quite rotten, and may be separated from those that are sound, and the sound ones will have kept much better in the clay up to this time, than in the root-house. Some measures should be taken this fall to provide seed for spring. This might be imported in sufficient time, and should be ordered of the most approved varieties.—*Agricultural Journal.*

The Amherst (Mass.) Express contains an article, probably from the pen of Pro-

fessor Hichcock, on the cause of the extraordinary and disastrous failure of the potatoe crop. He expresses the opinion that the failure of the potatoe crop this year is the result of disease. And by way of showing how he comes to this conclusion, he remarks, that the tops failed first, and appeared as if they had indured hard frosts. And as it is in the leaves and stalks that the juices and other principles that nourish the roots and tubers are prepared, if these fail, the potatoes must be stopped in their growth. They do not ripen and, of course, are liable to decay. He expressed doubt in regard to the cause of the disease. He thinks, however, it must be something derived from the atmosphere, since it is so wide-spread. He inclines to the opinion, that the season has been too wet for this crop. He is confident that the ground in this region has been too wet for potatoes; and he finds that in dry land they have suffered less than in wet soil. He therefore infers, that it will be found, that in those parts of the country that have been dry, the potatoe crop will not suffer much in this way. He thinks it very possible, that the electric state of the atmosphere may have had something to do with the matter. With regard to the supposed poisonous quality of potatoes affected by this malady, he expresses the opinion that there is no peculiar virus in them that need excite a panic—Though the potatoe belongs to a poisonous tribe of plants, cooking renders it harmless. And as there is no danger that man will eat potatoes raw, he need have no fear of eating them, provided he rejected those that are water soaked.

CULTIVATION.

A most important point which the cultivator should continually keep in view, is, that he should study Nature; for if we believe our senses, or place any confidence in overwhelming evidence, we may be certain, that all the conditions we observe in a natural state of things have been planned, and are carried on by an All-wise hand; and further, that a finite mind can never attempt with success, either to surpass or to dispense with any portion of that which an infinite being has ordained. 'Order is Heaven's first law,' and in whatever we may attempt to do we shall not be wise, if we endeavour to effect our purpose by any means which may distort the fair proportions, which unaided nature presents to our view. In cultivating plants, therefore, we should administer the conditions which are favourable to their growth and development, in somewhat the same proportions each to the other, in which they are naturally blended—not supplying one essential, in an undue manner, and at the same time, neglecting others; for successful cultivation must ever depend upon the connection and influence of numerous circumstances upon each other, and can never be attained, unless these conditions are complied with, either designedly, or as it often happens, by mere accident. Another point which it is important to keep in view, is that instructions should be studied, rather than copied, in their application to practice.—*Moore, on the Cucumber.*

St. John Observer, October 26,

The Agricultural Fair and Monthly Market for St. John will take place on Thursday next, in a field belonging to R. F. Hazen, Esq., on the Waterloo Road; and as long and zealous preparations for the former have been making by the Agricultural Society, we look forward on this occasion to an unusually interesting exhibition. In all countries, blessed with a fertile soil, Agriculture is the first and greatest of interests and pursuits; it is the original occupation of human kind, the base and foundation of all other mortal avocations—that which must furnish the very means of existence, the support and nourishment of life, without which no other human enterprise can possibly be prosecuted. The "tiller of the ground" was, indeed, the first and most ancient of operatives in this terrestrial world; the culture of the earth has ever been and ever will be, the most necessary, the most honorable, the most useful, the most