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Miramichi, Saturday Afternoon, November 16, 1844.

Agricultural Journal.

First Agricultural Meeting of the Township of York Agricultural Society, held at Rosse's Hotel, February 2.

The President, Wm. Gurdlestone, Esquire, in the Chair. Subject—Management of Land for Fall sown Wheat.

Mr. Alexander Milne was previously appointed to open the discussion. He considered the wheat crop by far the most important crop cultivated in this country, and therefore any information on this subject most valuable to the farmer. He had, for many years past, been a close reader of agricultural works, especially the magazines published in the neighbouring country. He had noticed that rapid strides in agriculture had been effected through the agency of those worthy periodicals and associations for encouraging agricultural improvements, and in no instance has those improvements been more apparent than have been more apparent than have been effected through the introduction of clover culture. It is now acknowledged, on all hands, both in Europe and America, that the clover plant is the best possible food for wheat. Ground, properly cultivated and seeded down with clover, might be ploughed, the second year, in the latter part of August, and after the inverted sod had been allowed to settle a fortnight, it will then be in a fit state for depositing the seed. This is the practice of the best farmers in England and the United States, and heavier crops have been grown from this method, than from the common method of making naked summer fallow. It appears to be the most rational, economical, and by far the most profitable mode of treating land for the wheat crop. By using a liberal dressing of gypsum on the clover, a great proportion of the food for the plant is received from the atmosphere, and, besides, the roots of the clover strikes to a much greater depth than the ordinary crops that are cultivated, and from these sources much of the food that is most natural for the clover crop is received, without apparently injuring the fertility of the soil. Indeed the soil is benefitted, inasmuch as it receives rest, and hence the loss sustained from the evaporation of gases, heavy drenching rains, and exposure to the midsummer heat are avoided, which are the greatest objections urged against summer fallows.

A heavy crop of clover will as thoroughly free the ground from all noxious weeds as a thorough summer fallowing operation. As this fact has been often proved in this country to the satisfaction of the best experimental and most skilful farmers in it, it will scarcely be necessary for me to dwell on this branch of this highly interesting and important subject. I would, however, beg the indulgence of this respectable assemblage of my fellow farmers a little farther, by pressing upon them the importance of making a few well conducted experiments in sowing wheat upon inverted clover ley, and by engaging more extensievly in the clover culture. Six quarts of clover; and three quarts of Timothy seed to the acre is a pretty fair seeding, and, to secure a strong and healthy growth, about one bushel and a half of plaster per acre should be sown on the crop with which the seeds were sown.

Rust on wheat is one of the most fatal diseases that the wheat crop is subject to in this country. By cultivating clover in rotation with the wheat crop, this calamity is, in a great measure, prevented. Rust is caused by the overflowing of the sap vessels, which is principally brought about by too rapid a growth of the plant at that stage of its growth when the berry is being formed, or when it is in its milky state. By the ordinary method of manuring summer fallows with raw barn-yard manure, the which, in very many cases, has naturally too much vegetable matter for maturing the wheat crop, is then overchaged with material that will ferment in the hot days of July, and thus force a rapid growth, which operates on the wheat crop precisely the same as the fungus is created by an excessive fermentation of a hot-bed; but when, the second crop of clover is ploughed down, the tender clover and roots have passed through their several stages of fermentation before the end of the month of June, or in fact before the plants have commenced to stool, the gases arising from this fermintation, ameliorates and pulverises the soil, forces a strong and healthy growth to the plants, and pushes out strong and healthy leaves, and the roots strike deep and become proportionably strong from the effects of the newly made soil created from the decomposition of the young clover and the roots of the clover plants.

If the agriculturists would study into he causes and effects, as I have endeavoured to do for the past number of years, they would then be enabled to remove obstacles which at present appear almost insurmountable. I am fully convinced, that both chess and smut may be prevented in every instance and that damage from rust may be avoided in nine cases out of ten. By sowing clean seed, and thorough culture, chess may be entirely prevented; and, to prevent smut, there are nearly as many cures as there are to the most common diseases which afflict the human body. The most efficient preventives, which have come under my observation, are allowing that portion of the crop intended for seed to stand until it is dead ripe, and by thrashing it immediately when taken into the barn. If this plan is honestly followed, smut may be entirely prevented. When any portion of the seed is impregnated with smut, washing it in salt and drying it with fresh lime will lessen the probability of smut; but a far more certain plan is to wash the seed in a solution of blue vitriol Sir Humphrey Davy tried 14 expriments, and those in which he used blue vitriol, lime water, salt and ley, there were not a single grain of smut to be seen; but, in all the others, there were more or less of the grain injured by this disease. Clover culture, deep ploughing and liming, are among the most certain preventives of rust, and probably none is more effective than deep ploughing, especially when the ground is composed of a strong calcareous earth.

I have only directed your attention to a few leading features of this highly interesting subject, and, in conclusion, would say that each individual present should endevour to impress upon his neighbours the importance of becoming members of this Association, and aid in giving a general interest to its monthly meetings, by contributing to the general mass of information, thereby lending their talents and influence in furthering the great cause of agriculture, and thus aid in elevating its character, both in the eyes of the agriculturists and other classes of society. Every inducement is now held forth, for both old and young, experienced and inexperieced, to become members of Township Associations, and if each member now present would make it a point to call upon their next door neighbours, and point out to them the advantages which would result from a combined effort to effect agricultural improvement, they would thus add monthly to the list of subscribers, until nearly every farmer in the township would have enrolled his name among the list of subscribers to this Association.

From the Eastern Chronicle.

ON VEGETABLE PHYSIOLOGY.

I shall now say something on the food of plants. In commencing this part of the subject I may remark, that to chemistry we are chiefly indebted for what we know of the food of plants; consequently it may be regarded as a modern discovery. Our forefathers knew the value of manure perhaps as well as we do; although they might not imagine that the whole virtues of 50 loads might be contained in a puncheon. The celebrated Lord Summerville, once told an old farmer, that he did not despair of finding a manure, which he could carry in his snuff box. The farmer archly repled, "My Lord, when you carry your dung heap in your snuff box, I will carry your stack-yard in my pocket;" and I doubt not the farmer expressed the sentiments of Agriculturists in general, although my Lord's anticipations were well grounded, as modern discoveries have demonstrated.

First,—In endeavouring to explan the still mysterious operations of vegetation, the first and most important object of inquiry is, to determine, by what means the simple cro-inorganic elements of fossils and ærial origin which are received into the vessels of plants are there changed into vegetable compounds—by what means, from these simple elements or binary compounds, vegetables form those other matters by which they are nourished, increased in size, elongated and expanded, and which thus give occasion to all the successive phenomena of vegetable life.

Secondly,—It may be observed that in the most of the circumstances of vegetable life, the materials which serve as primary nourishment to plants, seem almost reduced to nothing when we compare the tenuity of these materials with the solidity of vegetables.

A number of plants grow upon solid rock, from which we might suppose they can derive nothing. Such is the primary vegetation of lichens and mosses, upon quartz and granite, where it would appear their whole nourishment must be derived from the air, as it cannot be conceived that solid silix would contribute to their nourishment.

Thirdly—The same observation may be extended to those vegetables and trees (sometimes of great size) which grow in fine sand, or which grow and push deep roots into compact grindstone-rocks, or in the fissures of excessively hard lavas Nor need we be surprised to find the stones of buildings covered with vegetation, when the contact of air alone, seems sufficient to their existence. Mustard may be grown for salads on board of vessels at sea in certain temperatures, by sowing the seeds on wet cloths: some have supposed from the circumstance of plants growing in water, that the ground was only serviceable to plants in supporting them erect. This opinion, however, exhibits very superficial reasoning, as I shall now endeavor to demonstrate.

Air and water are undoubtedly the principal agents in vegetation. The ground not only serves the purpose of holding plants erect, but is also the great laboratory, where the food is prepared by fermentation and decomposition. Without the action of air and water, fermentation and decomposition cannot go on. When we say that air and water are the principal agents in promoting the growth of plants, we must bear in mind that these are compound elements. *Water* is composed of two parts of Hydrogen and one of Oxygen. Common *Air* is composed of twenty parts, by bulk, of Oxygen, and eighty parts of Nitrogen. Humic acid is composed of carbon and Hydrogen. Ammonia is composed of three parts Hydrogen and one part Nitrogen. Lime is composed of a metal called Calcium, and Oxygen. Potass is composed of a metal called potassium, and Oxygen. *Potass*, *Lime* and *Ammonia* are often combined with carbonic and gas, which is also contained in small quantities in common air.

Perhaps the most important of all these simple principles is *carbone*, the chief ingredient in humic acid. It is this carbon that constitutes the greater proportion of the solid substances in alplants, while water constitutes the chief fluid portion; and hence—Hydrogen, which is contained in water, in humic acid, and in ammonia, is so important.

The mineral part of the soil which, exclusive of lime, is composed of clay and flint, earth in the form of sand, and gravel various degrees of fineness, together with magnesia, iron, and some other metals, contributes little or nothing to the food of plants. These portions of the soil appear to be chiefly useful in dividing and diffusing the nutritive parts arising from decayed plants in natural soils, and from various manures in artificial soils. This prove in another point of view, the usefulness of lime, when laid upon artificial soils. *Plaister of Paris*, is also an exellent agent in fixing the ammonia which escapes during fermentation, and which, if allowed to escape in large quantities, occasions a serious loss of plant food, as ammonia and humic acid are the principal ingredients in promoting the growth of plants. By the free action of air and water, these ingredients are prepared in the soil as I have already said, by fermentation, and reduced to such a state of fluidity as to be easily taken up by the spongelets of the roots.

Reasoning upon this principle enable us to account for the beneficial effects of fine culture, which we are apt to think is only necessary for covering the seed. I have said that every good soil must contain a certain portion of air and water in an active state. Consequently to admit of this action, the ground must be loose and friable to imbibe the rains, and condensed vapours of the atmosphere and also to allow a free filtration of superfluous moisture,—which, if allowed to stagnate, gorges the sap vessels of plants, as will be seen illustrated in instances where people keep the saucers of flower-pots continually full of water.

This reasoning also proves the use of summer fallow, by breaking down the hard texture of the soil, and rendering it the more suseeptible of heat and moisture. It also enables us to understand why many unproductive soils ere rendered fertile by culture alone.

This leads me also to remark, that great error generally prevails, respecting what is generally termed exhausted soils. Ground often becomes unproductive, by requiring it to produce plants of the same species in succession. Certain classes of plants requires a greater portion of lime, for instance, than others, and repetition soon exausts the soil of that ingredient; hence the ground fails to yield that species of crop, although it would mature a good crop of a different one. This is not the only evil attending repetition. Every plant when growing gives out certain excrementitious matter, highly injurious to its own species, although harmless to other classes. By repetition, the ground becomes so highly charged with this excrement, that it acts as a poison to the crop, as the filth accumulated on the human body proves injurious to the system.—These remarks may enable us to understand the advantages of what is called alternate husbandry, and teaches us that we cannot violate the laws of nature with impunity,—and also, that until we know the kind of food best adapted to the system of different species of plants, and the best means of administering to their wants, we cannot boast of perfection in agriculture. By the valuable discoveries of Sir Humphrey Davy, Fourcroy, De Condoll, Liebeg and others, many of the mysteries of vegetable physiology have been laid open, and great advantages to the human family must result. Indeed, I do not despair of seeing Agricultural chemistry introduced into our national system of education. But from the very nature of things, anything approaching to perfection in the science can never be accomplished, for Nature works by such imperceivable means, as to render it far beyond the reach of human capacity to trace her sublime and undeviating system.

CARROTS FOR HORSES

We were lately told by the proprieter of one of the most extensive livery stables in this city, that he has had an experience of several years in feeding the common yelllow carrots to his horses, and that he considers them the most valuable article for winter feed that he has ever used. He considers a peck of carrots and a peck of oats worth more for a horse than half a bushel of oats alone; and for horses that are not constantly employed, the carrots alone are far preferable to oats. He would purchase carrots for his horses, in preference to oats, even if the they cost the same by the bushel; the price of carrots, however, is generally about half that of oats. His horses eat the carrots with a far better relish than oats,—so much so, that if a