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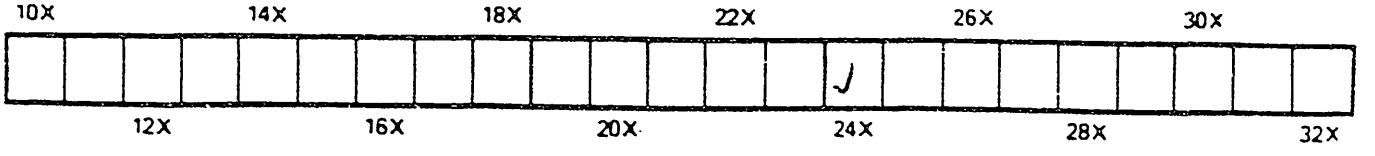

THE

CANADIAN AGRICULTURAL JOURNAL.

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How differently Agriculture is estimated in the United States from what it is here in Canada. In the former country, the State Houses of the several Legislatures, particularly in the New England States, are given up for holding meetings for the discussion of Agricultural subjects, when their Legislatures are not in session. At Boston, Concord, and Montpeller, these meetings are held, and the most interesting and useful discussions take place two or three nights in the week. Legistators and the most respectable men of the country attend. We wonder what would be said to us were to propose such a plan in Montreal as the having meetings occasionally, when our Parliament was not in session, in some part of the buildings of our Legislalature, for discussing Agricultural subjects? We suppose that it would be considered a great insult offered to our Legislatures, though the representatives of an Agricultural population. It may be very presumptuous of us to avow our own ideas on the subject, but we will say, that the meetings which might be held in our Legislative buildings for the discussion of subjects connected with the improvement and prosperiry of Canadian Agriculture, provided they were conducted in the same way as in England, and in the neighbouring States of the Union, might be productive of as much general and real benefit to the country as are produced by the Sessions of the Legislature, and without any of the expense of the latter. We wish not to be misunderstood. We do not offer any objection to our Provincial Parliament; on the contrary, we are proud of the Constitution that has given us the privilege to have a Legislature to make few and good laws for our government. What we say is, that discussions on a subject of such vast importance to Canada as her Agriculture, might be as useful in some part of our Legislative buildings, as any other business transacted in them. It would have a further beneficial influence, that it would excite an interest amongst all classes that is not now felt for the improvement of Agriculture. It would make it fashionable, and that would have no small effect in recommending it to the people of Montreal. Our Legislature have certainly a great influence upon our destinies, but it would be very well for the people not to leave all that is possible to be done to promote their prosperity and happiness, to them. We do not require to make laws, for we have them in abundance, but we might make many other regulations for the encouragement of Agricultural improvement, were we to meet frequently togethar, and discuss them in a proper spirit, that would really promote the general prosperity, and increase the means of comfort and happiness of the people. The very best practical Agriculturists might derive benefit from these discussions; and though their own self-confidence would suggest the contrary, their patriotism, and desire to advance the good of the country, would surely be sufficient inducement to urge them to impart their superior skill to others not so well informed. Every individual of a community owes this duty to that community. It was for the general good of society that the Creator of all things endowed a few with superior intellect, that they might employ it for the good of their fellow men as well as for their own; and they make but a poor return to the Giver of these blessings when they only employ them for their own purposes and benefit. It is a species of selfishness and ingratitude that is unworthy of men of natural endowments and intellect, freely bestowed upon them when it has been withheld from other men. The chief cause of this, we believe to be, that most men give themselves credit for all the advantages, natural and acquired, which they possess, and are not sufficiently sensible of, or thankful for having received them from their Creator. We have often been answered, when recommending Agricultural publications to the attention of the farmers, "Oh, we do not want any further information on the subject of our business; we understand it perfectly, much better than we can practice it; we cannot learn anything further that would be of any use to us." Now, it is well undersood by all well informed and unprejudiced men, that even if they did know all things as perfectly as any other men in existence, there could be no reasonable objection to be confirmed in this knowledge by reading the practical experience of others, and find it to be exactly the same as their own. We have many times observed that, the more knowledge we can acquire, the more convinced we must be of our comparative ignorance, and of the vast amount we have to learn. An uneducated, or an ignorant man with a little education, thinks he knows all things,

because he has never been led into deep thought by extensive reading. As we read extensively, our ideas expand, and things are brought before our mind's eye we never before dreamed of. Our desire to know more becomes thus enlarged, and hence it is, that a reading man becomes more anxious to read every day of his life, not the reader of light works of fiction, (though there are some of these works which may be read occasionally) but readers of works of merit. written for the instruction and benefit of the human family. The ideas of the man who does not read are confined naturally to himself, and matters and things within the compass of his vision; they do not, and cannot extend any further. Extensive reading is actually required by Legislators and those who would be benefactors of mankind, or we shall have neither in any degree of perfection and usefulness. No doubt, in a Legislative body, some members of sound judgment, though not extensively read, might be very useful, but they never can take a *useful* leading part; they will not know how, however well disposed. These are simple truths that if not well understood by all who may read them, will be perfectly clear to some who may. The whole object of our Journal is to advance, if possible, the general prosperity and happiness of this fine country of our adoption. We trust there never will be found in its columns *one line* that would be calculated to produce a contrary effect. We may deliver our opinions with too great a degree of freedom, but if we were to conceal these opinions we would not perform our duty to those from whom we expect support, and whom we are anxious to benefit. Our opinions are not party ones. We give them only from a desire to excite in the whole of the Canadian community an interest in the improvement and prosperous condition of Canadian Agriculture, as the surest, and indeed, the only means of establishing, upon a firm basis, the general prosperity of this community. We propose no plan;—we only say, that whatever is possible, and most likely to produce the improvement required, it is the duty of all who possess the power and influence to adopt at once.

At a late meeting of the Farmer's Club-House, London, Mr. Smith of Cranston, Scotland, delivered a most interesting address on the subject of draining—which we copy. There is the same necessity for sufficient draining in Canada that there is in the British Isles, and it would be productive of the same good effects. We have never read an article on the subject, that is more correct and deserving the attention of farmers, than Mr. Smith's address. He describes exactly the effects produced by sufficient draining and he want of it. If we were to take the trouble to explain these matters here, we should soon see the good effects of it. We endeavour to collect the newest and best information on these subjects for our subscribers but we find that all we can do in this way is regarded with a jealous eye, if not with indifference. In no other country on earth would these be grounds for making such a complaint.

Mr. Smith said he should have great pleasure in responding to the call that had been made upon him by the chairman, and would endeavour to illustrate the leading points of the subject of drainage to the best of his power. He could not enter into a discussion, on an occasion like the present, of the question in all its branches, but must confine himself to the leading points and such portions of it as were most essential to the subject, and should afterwards be glad to hear any observation and to meet any objection that gentlemen might raise from what he should say. He regretted being absent from their last meeting, which was owing to his being in Scotland at the time, but had written to their friend Mr. Shaw, explaining to him the cause of his absence. Mr. Smith commenced his remarks on drainage by observing that the importance of thorough-draining was a point on which they were all agreed, and upon which conviction was so general that it was unnecessary to dwell upon it. Unless land was rendered thoroughly dry, there was no hope for good cultivation. Now, there were two kinds of draining, which many persons were apt to confuse one with another: one of the kinds was to get rid of springs of water rising from the land itself, and the other for carrying off the water which fell upon its surface. These who were experienced in the matter knew that it was of very much more importance to carry off the water from the surface than catching any accidental springs that might occur below the surface; this latter draining might be of importance in some cases, but there was no portion of land for cultivation that would not be benefitted by the sinking of frequent drains so that the water which fell upon the surface might find its way to the proper channels and be carried off. The talented lecturer here directed attention to a colored diagram in the room, representing a section of soil under the operation of draining; its chief purpose was for explaining that, beneath the portion of soil that had been stirred by the subsoil plough, and which had received no mechanical aid, it was, nevertheless, full of cracks or fissures, open throughout, and admitting of the percolation of water and the admission of the atmospheric air. These fissures were explained to be of varying size, according to the nature of the subsoil, and were produced by the abstraction of the water from the soil through the action of the drains. He further observed on this head that it was a wise provision of nature that in proportion to the greater quantity of clay contained in soils, and which renders them more impervious to water in their original condition; they are by this very circumstance, when drained, more disposed to contract and form large fissures. Drift soil, he observed, which is full of sand and stones, and more open in its original state, contracts less when laid dry; still he had found from experience that the facility of soils for transmitting water when under the influence of thorough-draining was more uniform than might at first view be imagined; so that a distance of from 18 to 20 feet, from drain to drain, would be found to be a good practical distance for all

soils. Thorough-draining well executed in clay soils may be reckoned upon as being fully as permanent as in any other subsoil; and, as there is less running sand from the clay, the drains are less likely to become filled up. Clay when drained and having become filled with fissures, will never entirely fill up again, although in wet seasons the fissures may swell and close up a little, therefore, if the consequence of sinking the drains was that the whole mass of soil became full of fissures, it must be manifest that if the land were not drained the rain would fill up all the openings of the active soil; and whatever rain fell would run over the surface into the water-furrows, carrying with it a great deal of the finest particles of the soil. It has been usual for some farmers to set off their lands in very narrow ridges, and to give the surface a curved form, that the water might run easily into the furrows; by this means much of the land was entirely lost for cropping, and much of the grain which grew for a considerable distance on each side of the margin of the furrows was stunted and worthless. Where drains are properly executed. the water falling upon the surface finds its way into the drain by slow percolation, thereby leaving all sediment behind it to enrich the soil. After some scientific remarks upon the decay of vegetable matter, and the food of plants, and the displacement of the air in the fissures by water after showers, Mr. Smith proceeded, by saying, that if the soil were within four or five inches of the surface, it would by a continued course of crops, become exhausted in fifty, sixty, or a hundred years, but if, by thorough draining it was opened up, those portions were rendered available for the purposes of cultivation which lay at a greaten depth, and plants would there find what they wanted, both of mineral and vegetable matter. Another great advantage of thorough draining was, while it carried off all free water, it gave the soil when drained a greater power of retaining moisture than before, and which soils would not, therefore, become parched up in dry seasons, as frequently is the case with undrained stiff clay soils. Now, in looking at the diagram, to which he pointed, they would see that the twelve inches of subsoil opened up by contraction would be quite enough to receive all the rain that would fall in twenty-four hours, in fact the greatest height which it could attain to, he believed would be nine inches; all above that would be in a free state, and passing through by percolation, without doing any injury to the plants. Chalk soils, he observed, are very difficult to drain, and although apparently dry on the surface, they are very retentive of moisture. He was of an opinion that thorough draining might be beneficially applied in chalk subsoils, and probably the same distance from drain to drain might be suitable, as on the other soils; but, one thing was clear, that whatever soil required draining, the best economy was to drain it thoroughly. With regard to the depth to which drains ought to be cut, he would say that from two and a-half to three feet was a good practical depth; four feet would perhaps be better, but there must be a limit as regarded expense, and considering utility and economy, he thought the depth he had mentioned was just about sufficient to secure what was wanted, viz.. a thorough and complete drainage at all times. It was of great importance, in the construction of drains, that they should be kept narrow at bottom, for two reasons: first, because fewer stones would be required; and secondly, because if any sediment should be deposited, the water would have greater power to act upon a confined channel, and thus remove it. The most important things with respect to the stone drain is, so to cover the stones with thin turf as to prevent the ingress of any water in a direct manner into the drain. He would therefore, recommend first, that a thin covering of turf be put over the stones, and well tramped down, and that this should be followed by a depth of six or eight inches of the stiffest of the clay which had been dug out; this, also, being firmly and well trodden down, so that no water can find its way directly into the drain. In box drains the water rushed along with great force, and this force ultimately destroyed the dram itself; but in the drain made with broken stones, the water was prevented from gaining a rapid motion. In executing tile drains, and the best form of construction, he remarked that the horseshoe section, with a sole made a very good drain. In some places, he said, they constructed their drains without using soles, but by adopting the horseshoe section without the sole, the subsoil became forced up and destroyed. Much had been said of tube tile of late, and he certainly approved of it himself; it was much stronger and the form much better than the other description of drain tile, as regarded the discharging of water. Some farmers used tube tiles of one inch bore; but he preferred the size of inch and a-half or two inches, as it would admit of a freer circulation of of air. In cutting in clay soils, it is a very easy thing to cut the drain so nicely to the size of the tiles as to allow them to be put in without any fear of displacement; but it was not so in stony soils, to obviate which difficulty he had lately introduced a mode of forming the ends of the tiios so as to interlock with and sustain each other: drains could be as cheaply executed with this kind of jointed tile, as with the common tiles or tubes. He was satisfied there was nothing so suitable for filling in upon the tiles as the stiff clay dug out of the ground in cutting the drain itself, which ought to be well tramped in. When drains are well construc ted, either with stones or tiles, so that water is not allowed to get directly down, they may be calculated to last for 100 years; he had himself seen drains in a perfect state after thirty years' use. After again directing attention to the importance of making the drains of the most substantial nature, he concluded by requesting that the modesty of the gentlemen present should not deter them from putting any questions to him which might suggest themselves, and to which if he could answer them he would, and if not he would candidly tell them so.

AGRICULTURAL TRAINING SCHOOL AT HODDESDON.

(*Abridged from the Herts County Press.*)

The introductory lecture on the opening of the Hoddesdon agricultural school was delivered before a large and highly respectable meeting on Tuesday, Jan. 15, by the head master of the establishment, Mr. Hazlewood. On commencing this gentleman observed that. through the instrumentality of a few patriotic individuals, all the sciences connected with agricultural prosperity and the improvement of the soil were at *last* made accessible to them; still he did not think the useful sciences, to be taught by him and his coadjutors, should be confined to the agriculturist alone, for he believed the times were fast approaching when it would be found desirable for all classes to avail themselves of that knowledge. He next observed, that mathematical science, whether considered in its nature or its results, appeared equally amongst the noblest objects of human pursuit and ambition: that from a few self-evident propositions was originated an intellectual creation applying to and illustrating all the

phenomena of nature and art; and the same calculus which measures and points out the application of labour, whether by machines or animals, determines the force of vapour, and confines the power of the most explosive agents in the steam-engine, regulates the form and structure best fitted for moving through the waves, developes the strength of the chain for the bridge necessary for passing across the arms of the ocean, fixes the principles of permanent foundations in the most rapid torrents, and, leaving the earth filled with monuments of man's power, ascends to the stars, measures and weighs the sun and planets, and determines the laws of their motions, and brings under its dominion those cometary masses, wanderers in the immensity of space.

That which marks the present age, he observed, even more than the progress of physical science, is the practical application of science to the purposes of daily life, for supplying our ordinary wants, and for ministering to our comforts in the smallest matters. Our streets are lighted, our houses warmed—our clothes are woven—our cushions are made easy; we travel by sea and by land—we make our coffee—we light our candles—we perfume our rooms, by elaborate combinations of mechanical or chemical science. Our knowledge of the animal, vegetable, and mineral world at the same time has been greatly extended, and every year new products are applied to medical and economical uses. The lecturer, on his discussion of education, laid down as a proposition "that the communication of knowledge is not the sole end of education." He remarked that it is not the chief end, and that he held the communication of knowledge to be a secondary object in education. In intellectual education, the first great object is to develop and train the several faculties by exercises adapted to their growing strength; so that they may attain the highest degree of readiness and power, not in one particular branch to the detriment of the rest, but the greatest vigour they are capable of in harmonious co-operation, and thereby form a perfect man—perfect in the healthy and robust constitution of the whole intellectual being. A child or a man may seem to know many things, and yet have no power of the mind but memory, strong and active. He may be dull in comprehension, slow or inactive in perception, have no readiness in combining his knowledge, or in arriving at conclusions from experience, or in proceeding from the particular to the general. He may be without a distinct consciousness of the limits of his own knowledge, or of the strength or weakness of his mental powers. Such is likely to be the result of his intellectual condition if, during what was termed his education, he was made the mere recipient of knowledge poured into him, as into an empty vessel, without having his mind stimulated by his own exertions, and, by training, to a proper comprehension of the subjects before it. On the other hand, a man may possess but a limited knowledge of facts, and yet, by being trained to certain mental habits, be liable to master any ordinary subjects to which he may apply his mind; and if it be of a practical nature, to judge correctly of it, and to act efficiently. It is possible that certain studies may be preferable for the purposes of training, which are of little practical utility in after life; and that the man may have derived lasting advantage from the exercise of learning something, when the source is afterwards forgotten. There is no profession, no station in life in which a desire for intellectual exertion, a habit of attention, a retentive memory, a quick perception, a comprehensive capacity, clearness of ideas, soundness of judgment, a knowledge of the use of knowledge—that habit of mind, in short, which, by reflection and experience, gathers *wisdom*—is not far more valuable than any amount of mere *knowledge*.

"Knowledge and wisdom, far from being one,
Have ofttimes no connection. Knowledge dwells
In heads replete with thoughts of other men—
Wisdom in minds attentive to their own.
Knowledge—a rude unprofitable mass,
The mere material with which Wisdom builds,
Till smoothed and squared and fitted to its place—
Does but encumber whom it seems to enrich.

The question, therefore, to be determined is this—to render mental discipline in physical science effective for the instruction of youth, how shall it be conducted? In answering this question, we must first consider what mental faculties the study of physical science will exercise and develop. Objects and phenomena have to be examined and observed, whereby the bodily senses are exercised; then the cognizance of things with respect to their shape, size, position and colour, and of events, bring the faculties into play. By these means the power of observation may be noticed, and the mind taught to discriminate and compare. Then individual objects, according to their differences, may be divided into a species, and comprehended in genera. The process of classification will thus begin, and the mind become accustomed to intellectual order, and a methodical arrangement of its knoledge. When a considerable number of phenomena have been observed those which are accidental may be distinguished from those which are essential; by which the mind will learn to generalize. The relation between effect and cause will begin to be perceived; the faculty which perceives it, and which instinctively seeks it, will be exercised; and the mind will be gradually trained to recognize the relation where it subsists, and what is perhaps difficult to attain, will abstain from supposing it where it has no existence. In other words, it will learn the process of induction—the only method by which any truth can be discovered which is external to the mind itself, and not an immediate object of the senses.

Thus—while mathematical science is the practical discipline of the pure reason, and literature culivates the imagination an the taste, and also addresses itself to the moral faculties—physical scienc, by its very nature, is fitted to exercise all those faculties which are conversant with the the material world and its phenomena.

Science, the lecturer observed, learnt merely from lectures or from books, was little more than exercise of verbal memory, and was really hurtful to the mind by accustoming it to remain content with vague notions and faint ideas: half a dozen chemical experiments made by a pupil himself, would give him more instruction in chemistry than a hundred experiments witnessed in a room.

In like manner with the study of botany, the student himself should find out the points of resemblance which constitute the generic character, and mark the points of difference which distinguish the species; and not rest satisfied with learning by rote the botanical classification of De Candolle.

In vegetable physiology he must verify microscopic observations, and see with his own eyes the facts upon which the science is founded, and himself go through the processes of induction, by which the functions of the several parts of the plant are ascertained.

After some further physical remarks, Mr. Hazlewood strongly recommended the studying of one branch of science thoroughly, as far as his students' intellectual powers would permit them; the subject itself was of minor importance, and might be left to

the student's own taste. Convince the mind by one example, and the similarity which exists between all branches of knowledge will teach the same truth in all. Mr. H. further observed, I estimate so highly the benefit of mathematical discipline, that I would advise every student, without exception, to master the pure and mixed mathematics required in an ordinary examination. It will remain to be considered whether the rest of the time and labour of the student should be devoted to physical science or classical literature, this being a question which will generally be determined by the ultimate destination of the student.

HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

A monthly meeting of the Highland and Agricultural Society of Scotland was held in the Museum, on Wednesday evening, at the usual hour—the Earl of Rosebery in the chair.

CONVERTING SAW-DUST INTO MANURE.

The first paper, On Converting Saw-dust into Manure, by Mr. Bishop, land steward, Methven Castle, Perthshire, was read by David Milne, Esq.; and for several years back the author has been desirous of discovering some method by which saw-dust and the other waste of a saw-mill might be converted to some more useful purpose than it is generally applied to; and conceiving that it might be applied as a manure, he was led to make several experiments with a view to ascertain in what manner this might be most effectually accomplished. Undecomposed saw-dust, especially that from resinous trees, having an injurious effect on vegetation, he had endeavoured to discover some cheap method by which it might be more quickly decomposed, and thereby become fitted to promote the growth of plants. The first attempt made with this view, was to reduce the saw-dust to ashes, by spreading it over the surface of a piece of land, to the depth of five or or six inches, and to set fire to it, as is sometimes done with peat moss. Owing to wet weather, only the half was reduced to ashes, and no perceptible benefit was produced on the ensuing grass crops; but a crop of oats, after the land had lain four years in grass showed a marked superiority in those places where the saw-dust had been burnt. Having heard of the fertilizing properties of powdered charcoal, he proceeded to convert the saw-dust into charcoal, by partially excluding the air during combustion. For this purpose he procured a certain quantity of well-burnt lime-shells, which he mixed up in layers with saw-dust, the latter in as dry a state as it could be obtained; the whole was then covered over. In a few days the mass became ignited, especially towards the top and sides of the heap. Whenever the flame burst forth, an additional quantity of saw-dust was from time to time laid on, and thus the process was continued till interrupted by wet weather. When this carbonised dust was applied, along with lime, to grass, potatoes, and corn crops, the result proved highly satisfactory; and, in one instance, its beneficial effects were more obvious the second year than the first. In order to avoid the expense of purchasing lime-shells, and to show, at the same time, that the beneficial effects of the charred dust could not be ascribed to the lime used in the process of charring, another method was adopted, namely, by preparing two or three fire-heaps of brush-wood, which, after they had burned for some time, were covered with a thin coating of saw-dust; wherever the fire broke out to any extent, additional saw-dust was applied, and this was continued from day to day, a thick coating being laid on in the evening, which was partly raked off in the morning, so as to retain a regular thin covering, through which the air could pass, to carry on the burning within the heaps. By this method Mr. Bishop has converted into charcoal 600 bushels this season, and it has been applied in different ways to turnips, and also used as a top-dressing partly by itself, and partly in mixture with guano, ammoniacal water, malt cummings, and other substances; and in all these cases its beneficial effects have been more or less apparent. The aptness of this substance to imbibe the fertilizing properties of liquid manure, the ammonia of byres and stables, and the effluvia of confined and unhealthy habitations, is a circumstance which entitles it to much consideration. It is recommended that the saw-dust, when taken from the mill, should be deposited in a dry airy shed, as it is exceedingly liable to imbibe and retain moisture—a circumstance which greatly impedes the process of charring. It is calculated that saw-dust may be thus converted into this useful manure, at the rate of about one penny per bushel.

EFFECTS OF DRAINING.

The advantages to be derived from draining are not limited to the admission of air into the soil, by which vegetation is benefitted, but it also removes those noxious substances from the subsoil which act injuriously on vegetation, and as the water sinks away to the drains it draws air after it into the soil, by which those changes in the organic matter in the soil are promoted that are highly necessary to keep up a steady supply of food to the roots of plants. The unproductiveness of much of the heavy and tenacious clay lands of this kingdom arises from excess of of water, since most of them contain in their composition all those substances which constitute a fertile soil, but from the quantity of water which fills the soil, it runs over the surface, carrying with it to the ditches and rivers many of those ingredients required by plants, and which, if the water filtered to the drains, would be retained in the soil. It is the washings of these lands which colour our rivers after rains, and which are deposited along their banks, forming these fine alluvial soils noted for their great fertility. The annual overflow of the rivers Nile and Ganges is the means of rendering thousands of acres of land highly fertile by the deposit left on the lands they flood, and which is obtained from the high lands in their course, and I may say that hundreds of acres of pasture along the banks of the Severn receive annually a most ample manuring by the deposit left after the winter's flood, which matter has been obtained in its course from the undrained lands lying along its banks, and thousands of tons more are carried out to sea and there deposited. But the disadvantages of not draining do not end here. A soil undrained is always much colder in summer than one drained, and this circumstance alone exerts considerable influence on vegetation. If you immerse the hand in water, and then, on removing it, move it about in the air, the evaporation of the water caaries off the heat of the hand, and a reducrion of the temperature, indicated by the cold experienced, is the consequence. Now precisely the same thing occurs in a moist soil. If a thermometer bulb be plunged, during the heat of summer, two inches beneath a soil that is drained, and another the same depth in in an undrained soil, the temperature of the drained soil will often be as high as 120, while the wet soil seldom exceeds 80 degrees of heat; here then is a difference of 40 degrees of heat in favour of the dry soil, the effects of which on vegetation will be duly appreciated by those of you who are fond of

gardening. Late frosts and heavy dews are a necessary consequence of undrained lands, from the circumstance of the water which has evaporated from the sod lying over such lands, and, as soon as the temperature of the air becomes a little lower than sufficient to keep the moisture suspended, it is deposited as dew, or floats as fog over the soil, thus constantly tending to retard the progress of vegetation—rendering the crops liable to injury in the spring, and delaying the time of harvest to a later period than necessary.—*Gyde's Lectures.*

MINUTES OF A PUBLIC MEETING,

Held at Brockville on the 4th day of December, 1844.

At a Meeting of Merchants and others, held in the Court House, this evening, for the purpose of considering the propriety of forming a Society, whose objects shall be the improvement of Agriculture in the District of Johnstown.

On motion of Wm. Buell, Esq. seconded by John Bland, Esq.,

Adiel Sherwood, Esq. was called to the Chair.

On motion of Wm. Buell, Esq. seconded by R. Watson, Esq.,

William Brough was appointed Secretary.

Thereafter it was moved by James Stevenson, Jr. Esq. seconded by Wm. B. Richards, Esq. and unanimously carried, that

It being considered a matter of essential importance to the general interests and prosperity of the district of Johnstown, that Agriculture in its various branches should be fostered and encouraged more than it now is, by merchants and others, who although not pratically engaged in Agricultural pursuits themselves, are nevertheless directly interested in the labors of the Agriculturist. Be it therefore resolved, that a Society be now established to be designated the "*Mercantile and General Agricultural Improvement Society of the District of Johnstown.*"

William Matthie, Esq. then read the draft of a Constitution for the government of the Society, and moved its adoption; the motion was seconded by John Esdaile, Esq. after which the articles of the proposed Constitution were read by the Secretary, *seriatim*, and with a few alterations they were agreed to by the Meeting. (The Constitution as adopted will be found below.)

On the motion of John Bland, Esq. seconded by Ormond Jones, Esq. it was Resolved,

That the following gentlemen, viz: Messrs. Wm. Matthie, James Stevenson, junr., Robert Watson, Thomas Webster, Wm. Brough, John Ross, junr., Wm. Buell, Ephrain Dunham, and John Esdaile, be appointed a Committee to procure subscriptions to this Society, and that this Committee Report to a Meeting of the Members of the Society, which shall be held on Tuesday, the 4th day of February next, at 12 o'clock noon, for the purpose of electing Office Bearers, and the transaction of other business.

On the motion of John Esdaile, Esq. seconded by Robert Watson, Esq., it was

Resolved, That the proceedings of this Meeting be inserted in the Brockville Newspapers.

On motion of W. B. Richards, Esq. seconded by John Esdaile, Esq. it was

Resolved, That the Chairman do leave the Chair and that Ormond Jones, Esq. be called thereto.

Another motion was then duly made, seconded and carried, *nem. con.* tendering the thanks of the Meeting to the Chairman and Secretary, for the manner in which they had discharged the duties of their respective Offices during the evening.

W. BROUGH, *Secretary.*

CONSTITUTION OF THE MERCANTILE, AND GENERAL AGRICULTURAL IMPROVEMENT SOCIETY, FOR THE DISTRICT OF JOHNSTOWN.

Article I. The object of this Society shall be the assisting in such steps as may be necessary to procure the institution of regular Fairs and Markets for the sale of Agricultural Stock and Produce in the District; the dissemination of the best published Treatises on Agrtculture; the collection and diffusion of information concerning improvements in that Science; the procuring of good seeds, improved breeds of Cattle and Agricultural implements for the use of the Farmers of the District; the awarding of Premiums for the best samples of Produce, and specimens of Stock; and generally the promotion of measures calculated to develop and improve the Agricultural resources of the District.

II. Each Subscriber of Ten Pounds to the Funds of this Society shall be a member thereof for life. Each subscriber of Five Pounds, shall be a member for five years; and each subscriber of One Pound and Five Shillings, shall be a member for one year.

III. The affairs of this Society shall be managed by a Committee consisting of nine members; who shall be annually elected by the members of the Society, from their own body by ballot, and the Committee thus elected, shall at their first meeting choose and appoint from their own body, a President, a Vice President, a Treasurer, and a Secretary.

IV. The Committee shall have full power to raise money, frame Bye-Laws and adopt any measures, by uniting with similar institutions or otherwise, which to them may seem advisable for carrying out the objects of the Society.

V. The Committee shall meet not less than once a month. All meetings of the Committee to be convened by the President, or in his absence, by the Vice President and Secretary.—Three members of the Committee shall form a quorum for the transaction of business.

VI. The annual meeting of the Society shall be held on the first Tuesday in February, in each year, when a report shall be presented by the Committee of their transactions during the preceding year, and of the state of the affairs of the Society. At this meeting also, the Committee for the following year shall be elected.

VII. Extraordinary meetings of the Society, may be called at any time the Committee or a ma-

jority of them shall see cause, or at any time twenty members of the Society shall, in writing, addressed to the President, request a meeting to be convened. Of all such meetings due notice shall be given by the Secretary.

VIII. The Secretary of this Society shall record in a book to be by him kept for that purpose, the proceedings of all meetings of the Society and of the Committee, draft the annual report, and carry on the correspondence of the Society.

IX. The Treasurer shall have the custody of the Society's funds, and he shall make payment, from them only on orders signed by the President and Secretaay. He shall keep regular accounts of his receipts and expenditure in suitable books, and shall at each annual meeting, or at any other time he may be requested by the Committee to do so, present an abstract of his accounts.

X. At any annual or other meeting of the Society (which has been duly called and advertised,) and which shall be attended by not less than twelve members, it shall be lawful for three-fourths of the members present to make such alterations in or amendments to this Constitution as they may consider expedient.

W. BROUGH, *Secretary.*

The Canadian Agricultural Journal.

MONTREAL, MARCH, 1845.

There are so many treatises on Agriculture now published, that it is almost impossible to write any thing on the subject, without copying something that has already been written. There is, however, a possibility of making a part of what has been written more practicably useful in Canada than it would be by reading an English treatise on Agriculture, as written for the English farmer. We have in our possession, certainly the best treatises on Agriculture in the English language, and many of them. From them, we are not ashamed to avow, we often copy largely, or rather we should say, they remind us of what we should write, and we hope our subscribers will not value our Journal the less that this is the case. In reading Jackson's Treatise on Agriculture, we have found some very judicious remarks under the head—"Practice of Agriculture," and they so entirely coincide with our own ideas, that in copying a part of them, we give our own opinion on the same subject. The practice of Agriculture requires very considerable professional skill, and also an acquaintance with some of the principles of natural science, that is essential to the judicious cultivation of the soil. Farming cannot be properly conducted by random rules, or by any but persons who make it a regular profession. To carry on Agriculture with a reasonable hope of success, great forethought and persevering industry is necessarily required; and to those qualifications, it would be well there were added the possession of a mind that is ever open to conviction of what really constitutes sound and available improvemenrs. The whole scheme and practical details of the professional Agriculturist, to be of public or private advantage, must rest upon the plain and obvious principle of making the largest possible return on the capital employed in the concern within a given period, but without exhausting the soil. By the term capital, is meant the savings of labour, in the form of money, implements, or any other articles, or objects which constitute stock, and unless a farmer possess a liberal share of this preliminary requisite, he is not able to till the soil on the best principles, or to manage any part of his business in the best manner, nor is he placed above the necessity of selling his produce at a disadvantage. What the precise amount of capital should be, will depend upon the extent, nature, and situation of the farm, and may vary from two pounds to five pounds the acre. In Scotland, a farmer who has £2000 capital, has generally a cash credit at a Bank for £1000 more, and often over this. Whatever be the capital employed, the farmer has a right to expect a fair return from it, provided he expends it with prudence, and adopts the best modes of culture. The farmer may be considered, in the employment of his capital, to be the administrator of a fund for the public interest, and therefore the more produce he can raise at the smallest cost to himself, the more will he be rendering a service to the whole community. There can not exist a doubt that the system of Agriculture that will give the greatest quantity of produce, at the lowest cost to the community, will invariably be the best. The whole population of a country are interested in the soil, and hence the general benefit to the people of a country, of producing the greatest quantity of good at the least possible cost. A very principle object with a farmer should be to understand perfectly the quality of the soil. By ascertaining the character of the soil, and if necessary remedying its defects, the profits of a farmer may be vastly increased. In many cases, a small amount of expenditure judiciously applied, will produce a great general improvement in a farm, but of course, a farmer must regulate his expenditure by the amount of capital he has at his disposal. A perfect acquaintance with the quality of the soil, will

enable a skilful farmer to adopt the most suitable modes of cultivation and management. From want of due attention to the nature and quality of soils, much labour and capital may be wasted in vain attempts to introduce plants not at all suited to them, and manure may be as improperly applied. This ignorance has and will prevent many from improving their farms and making them profitable, when they had the means in their power to do both. We shall in our next, discribe the different sorts of soil, and what sort of crops are best suited for them. We shall also endeavour to submit the best modes of cultivation, and management of the several sorts of soil we have in Canada.

The first requisite upon a farm where a dairy is proposed to be kept for the manufacture of cheese and butter, is, to have a well constructed dairy, where a regular temperature may be maintained at all seasons of the year; and this temperature should be from 50° to 55° both in summer and winter. The temperature might be maintained here in summer by having the dairy below the surface where the land would be favourable, or where not favourable to have a mound of soil raised outside the walls, and to have the building shaded with trees. In winter the temperature should be kept up by a stove or fire. The windows should be to the north and east; should have glass to close in winter, but in summer the sash and glass might be removed and the window frames be covered on the outside with gauze-cloth, which would exclude flies, but admit the air; and the windows might be further protected from rats, mice, and other accidents, by a grating of wire. The dairy should always be well ventilated, kept dry and clean, and be as much as possible removed from the effluvia of putrid substances. It is possible that the dairy may form a part of the lower story of a dwelling house where the land is favourable, but in that case, the effluvia from the kitchen and other parts of the house should be excluded as much as possible from the milk-room. The floor should be of stone flags or brick, with a drain of tiles, uncovered, to run off water, &c. When a large dairy is kept, it would be necessary there should be a work-room attached, in which different manual operations might be performed. It should be fitted up with a boiler to boil water and heat milk, and it should be of sufficient size to allow of performing the operation of churaing, cheese-making, washing the dairy utensils, and the like. When the dairy is of the largest size, there should be more than one apartment: namely, one for churning and for making the cheese, and one for cleaning the utensils. The store-room is merely for keeping the cheese when made, and may be placed wherever convenient; and should have a certain degree of warmth without having too much heat or light.

The utensils required for a dairy, must be in the number of each, proportioned to the size of the dairy, and quantity of milk to be manufactured. 1st. Milking-pails, which may be formed of wood or tin. 2nd. Sieves of hair or wire-gauze for the purpose of passing the milk through and retaining the impurities. 3rd. Vessels for holding the milk until the cream rises upon the surface, and a vessel for containing the cream. 4th. Flat skimmers of willow, ivory, or horn, for the purpose of skimming the cream from the surface of the milk. 5th. A churn. 6th. A wooden vat or tub, in which the milk is placed when the curd coagulated. 7th. A cheese-knife, for the purpose of cutting or breaking the coagulated curd, that the whey may be separated. 8th. A vessel perforated with holes, in which the curd may be placed that it may be broken and the serous matter farther extracted. 9th. Wooden vessels with perforated sides and bottom, in which the curd is placed for being compressed. 10th. A cheese-press. The utensils more especially employed for making butter alone, are the dishes for holding the milk until the cream separates; the skimming dishes for removing the cream; a vessel for holding the cream; and the churn. The dishes for containing the milk are, in England, made of various substances, as marble, slate, tinned-iron, zinc-tin, glass, earthenware, and wood; lead is also employed, but, we think, improperly, as it may be acted upon by the acid of the milk; and so likewise may iron, if not defended by a coating of some substance. The milk is sometimes contained in one large vessel or trough, with a stop-cock at the bottom, so that the milk may be withdrawn, leaving the cream in the trough; or it may be put in separate shallow vessels. These shallow vessels are latterly made of zinc. Tin, zinc, and glass vessels are easily kept clean, and sooner cooled than wood, which contributes to the more ready separation of the cream. The churns are of different constructions; the most common in the British Isles, is the plung-churn, moved by the hand; the form of this domestic instrument is everywhere known. It consists of a cylindrical vessel of wood placed upright, and the agitation to the milk within by a perforared board which nearly fits the cylinder, and to which is attached a long handle; this being moved up and

down, by various contrivances to make it more easy, the milk is agitated and the butter separated.

Sometimes in the larger class of dairies the churn is driven by machinery. The best principle of construction, it is conceived, is that of a plunge-churn, by which a greater agitation is given to the *milk*, and the operation more effectually performed than by arms revolving in a uniform direction.—Where machinery is made to work plunge-churns, two churns may be worked by the same power, the handle of each churn being attached to the opposite ends of the beam which moves these handles up and down in the act of churning.

Butter may be obtained by either separating the cream from the milk and then churning it, or by churning the milk and cream together. By the first method, the best butter is said to be obtained! by the second, the largest quantity. When the first method is practised, that is, when the cream is churned by itself, the milk, immediately on being brought from the cones, is put into vessels to cool, after being strained; in these vessels it remains undisturbed for a period of not less than thirty-six hours, and not more than forty-eight hours. The cream which has risen to the surface is then separated from the milk by being skimmed off by a flat skimmer; and in case of the milk being kept in lasge troughs, hy having the milk withdrawn by a stop-cock. The cream is then put into a vessel until a sufficient quantity is collected: fresh portions of cream are added to this vessel as they are procured from the successive milkings, and the whole soon accidifies. The fresh cream as put in should be stirred up with the old, with a stick kept in the vessel. After a sufficient quantity of cream has been collected, it is put into the churn, is then churned, and in the space of an hour the butter is separated. The bost temperatnre of the cream for the separation of the butter appears to be about 60°, and in cold weather it can be raised to this temperature, or something h·gher, by the addition of some hot wdter; or, if a small churn, by plunging the churn into hot water. The butter may now be removed, and should be carefully washed in cold water until all the milk is separated, which will appear by the water coming off clear and pure. After this the butter is fit for use, or may be salter for preservation. A small quantity of salt petre, pounded fine, and put into the cream previous to churning, is said to be a good plan.

In churning the cream should not fill more than two-thirds of the churn. When the cream and milk are churned together, the practice is somewhat different. In Holland, they put the milk of each milking into a deep jar, in a cool place, and each milking is thus kept separate until there is a slight appearance of acidity, and then the whole is churned together. In Scotland, the method is a little different;—the milk is when strained, allowed to cool for six hours, and then put into a clean vat. As long as it remains sweet, more milk is added, but not after any acidity is produced, it is then covered, and allowed to get sour, till it coagulates at the top. This coagulum is called the *lapper*, which must not be broken until the butter is churned, when the clotted milk is put into the churn, warm water is added so as to bring the temperature to 70° or 80° the whole being gradually stived in. This method properly executed, will produce more butter from a given quantity of milk, than when the cream is churned. The quantity of butter produced by milk, will depend upon the breed of cows and the quality of the pasture. We have made the experiment and on limstone pasture, and Canadian breed of cows, we got one pound of butter from ten quarts of milk. In another experiment, it took twelve quarts to produce a pound of butter. In England, when cows give a large quantity of milk, it requires sixteen quarts of milk to produce a pound of butter, and they consider that a good cow properly kept, should produce 200 pounds of butter in the year. We have no doubt, that cows of middling quality, selected for a dairy, if properly kept in Canada throughout the year, would give very near this produce of butter.

We shall in our next number continue this subject, and give the best information in our power, for the preparation of butter after it has been taken out of the churn.

We are glad to be able to acquaint our subscribers that there is a large supply of seed wheat in the country this year, that has been raised here last season, without being injured by either rust or the fly. We have a considerable quantity of this wheat, sown last spring the 25th of May, and we have reserved the whole to be disposed of for seed. We also know where a further supply can be had, and shall give the information to any person making enquiry. We are confident a large quantity of wheat may be raised here, if the land is properly prepared first; but without this we cannot expect to raise profitable crops of wheat or any thing else. We recommend to farmers sowing wheat, to steep the seed previous to sowing either in salt and water

or in urine. If in the former, it may be left to steep for a day, but if in the latter, not more than a few hours. In both cases, the wheat should be well stirred with a stick, and all the light grains skimmed off and removed. When taken out of steep, lime should be mixed with it, or ashes, if no lime is to be had, to dry it, and it should be sown immediately. By these precautions there will be almost a certainty that the crop will be free from smut. We have also steeped seed barley in the drainings of the farm yard, skimming off light grains, as in the case of wheat, with good effect. The barley might remain steep twenty-four hours.

At some of the Agricultural discussions lately held in the State Houses of the neighbouring Union, it was plainly recommended, that the English system of Agriculture should be introduced, as far as it was possible to do so. It was fully admitted that the English system was the best that could be practised in the country; and as the soil and climate of New Hampshire and Vermont are no better than that of Canada in any respect, the English system of Agriculture would be fully as suitable for us as for the people of the United States. Mr. Colman's report of his Agricultural Tour in the British Isles is now published, and from that it may be seen he recommends the modes of cultivation practised in England as the most suitable for the United States. This should encourage us to the same course, and the adoption of the same system. From the knowledge we have had of the soil and climate of the British Isles and of Canada, we are perfectly satisfied that the latter country is not unfavorable to a modified system of English Agriculture, and the sooner it is generally introduced the better it will be for us.

We would strongly recommend a practice that has been generally adopted in the British Isles by the Agricultural Societies there, of having at their meetings discussions on subjects interesting to farmers. The subjects to be discussed are determined upon sometime previous, and by this means, persons come prepared to the meetings, to discuss advantageously for those who attend. The writing of essays is also encouraged, and premiums are offered for the best essay on any given subject. The results come to upon any of these discussions are made public, and the prize essays are generally published. These measures are productive of the very best consequences, in promoting agricultural improvement. Affording an opportunity to persons to come forward and give the results of their experience and experiments, would induce many who now keep their knowledge to themselves, to make it known, for the public advantage. The assembling of men together, softens down strong prejudices, and makes them more communicative. The farmers are accused of being desirous to keep to themselves, and for their individual benefit, any discovery in their art which is advantageous. This we would regret to be the case in Canada. Discussions at the meetings of Agricultural Societies, and offering premiums for essays on useful subjects, would greatly promote useful agricultural knowledge. We have many Societies and Clubs in Montreal whose discussions are not the thousandth part of that consequence to the general welfare that discussions on Agricultural improvement would be. The time will arrive when it will be otherwise, though, perhaps, not in our day. The continued prosperity of Montreal must depend so entirely upon the prosperity and production of the country, that, those who have property in the city, will find out, one time or other, it can only be valuable to them in proportion to the prosperity of the country. It may not be acknowledged by our citizens, but it is nevertheless true, that it is the produce of the country that must pay the rents of houses in town,—yes, the city of Montreal must depend upon the country for every thing, and she cannot prosper if the country do not.

We believe that Agricultural Societies could not expend a part of their funds more beneficially than in offering premiums for new and useful implements of agriculture. This would encourage Canadian industry, and be very advantageous to our farmers to be able to procure a certain supply of good implements upon the spot, whenever required. All descriptions of implements should be light, and of good materials, so as to be sufficiently strong for the work they have to execute, and not a greater weight than necessary for the man or horse to make use of. This is of great consequence in agricultural implements; they cannot be too neatly made. A man or horse can execute twice as much work with suitable implements, well made, light, and of good material, as they would with heavy, ill constructed implements, made of bad materials.

We would recommend farmers, if they have not already attended to these matters, to see before the spring commences, that all the implements required for executing their work in the spring, should be put into complete working order. This will greatly facilitate their operations when the time arrives to

commence work. We have often suggested in our Agricultural Reports, and when acting as editor of the British American Cultivator, the necessity of farmers attending to these matters when there is most leisure, and not to lose time in puting implements in order when they should be actively employed. The want of implements, if not in good working order, in sowing or harvest time, is often a greater loss to the farmer than the whole amount of their cost would be.

There is an actual necessity that farmers should have a full supply of agricultural implements that are required for every part of his work, and if any of these implements are wanting he cannot go on with his work properly. We shall in our next Number give a list of the implements required on a farm that is to be managed in a judicious manner.

We require here a general farming repository for implements and seeds of all sorts, which could be constantly at the command of the farmers when they required any of these articles. This would be the place where all implements which might be invented in Canada could be exhibited, or the model of them. We trust to see Montreal not behind other places in this respect, in a very short time.

Particular breeds of both cattle and sheep are best adapted to particular situations, and therefore farmers should endeavour to find out and understand perfectly what breed is the most profitable and best suited to their situation, and to improve that breed to the uttermost, rather than try to unite the particular qualities of two or more distinct breeds by crossing. It is supposed by the most skilful breeders, that, by the practice of crossing we generally find the produce inherit the coarseness of both breeds, and rarely attain the good properties which the pure distinct breeds individually possess. The late Mr. Bakewell was most particular in regard to breeding always from the same breed. and scarcely ever crossed the different breeds; and certainly, few men were more successful in producing a fine and superior breed of cattle and sheep. In order to have a good stock of any breed, particular regard should be paid in selecting those that are most complete and perfect in their form, shape, and other necessary good qualities, and to breed from them. A great defect in the Canadian mode of breeding both cattle and sheep is, the allowing *all* the females to breed, good, middling, and bad. The consequence must naturally be, that our stock is of inferior quality, and no distinct breed to be found amongst them. We have here, a most suitable breed of neat cattle, that, if due attention were given to their breeding and keeping, would be the most profitable stock for Canadian farmers, until agricultural improvement is much more generally introduced. We refer to the pure Canadian breed of cattle. They are most profitable for milk. We are not to judge of what this breed might be brought to, from its present greatly neglected state.

The Canadian breed of horses, where they are to be found pure and unmixed, are undoubtedly the best and most suitable for this country that can be found. Indeed, we have never seen a better description of farm horse than a good Canadian horse. We regret, however, that there is a very great difficulty in procuring horses of the pure Canadian breed. The Canadian farmers have, unfortunately, taken a fancy to imported horses of American breed, and from crossing with them their breed of horses are much deteriorated. There are some sections of the Province which still have the Canadian breed of horses unmixed, and it would be well that every farmer in the country would most carefully preserve the breed pure where it is so, and check the crossing with other breeds.

Our respected friend, the editor of the Maine Farmer, has enquired if we had good horses in the neighbourhood of Montreal. We can assure him there are some very good Canadian horses in the district, but in the city, the horses, though fine for the saddle and carriage, are not many of them the pure Canadian breed that we have always so much admired for agricultural purposes. There are constantly going from Canada to the United States a great number of our best Canadian horses, and we import from the latter country a much worse description of horses.

We require a law to impose a penalty on persons allowing uncut horses to go at large, and if this was the case, our horses would soon be improved.

We have often recommended to Agriculturalists here the expediency of offering rewards at our Agricultural Cattle Shows or Ploughing matches to labourers for long and faithful services with the one master or employer. We conceive this would produce more benefit to the farmers than most of the premiums offered for choice cattle. To those who employ labourers on their farms, the advantage of having good and faithful labourers who understand their work, is much greater than is generally imagined. More work could be executed on a farm with three or four steady men who were accustomed to the work, and the employer, than by

double the number of men who did not understand their work, and who are constantly changing from one master to another. We again recommend this subject to Agricultural Societies, and hope they will make the experiment of offering premiums for long and faithful service. We also suggest the expediency of introducing the system of having cottages and small gardens for labourers employed on extensive farms, or on any sized farms where hired labour is constantly required. The labourers who have families might board at their cottages with their families, and this would be sure to attach them to one place, and their children would be brought up to industry, and be taught the work on a farm, in every department, in the best manner. If this plan was generally introduced, we should soon find the most satisfactory results from it.

Now that the snow is nearly off the lands, it should be the farmer's care, to see particularly that all his drains, and the furrows of his ploughed land are in good order, and that they are in a fit state to draw off all the water. Nothing can be more injurious to arable land than to have the water remain upon it now, until the sun dries it up. The soil becomes so thoroughly soaked with water, it breakes into a soft mass, and when dried, all the effect of the previous ploughing is done away, and when the sun dries it, it becomes as hard nearly as bricks. Much good can be done by opening with spade and shovel furrows and drains that may have become stopped by soil falling into them since opened last fall. We have frequently run a light plough with one horse in the furrows at this season of the year, where they have been much broken down, and with excellent effect, as a means of drying the land. We would recommend to any farmer who has ploughed land last fall, not to sow it this spring until it is ploughed again, if it has not been well drained in the fall, so that the water will go off it now without difficulty, and leave the soil dry. If it has run into a soft mass, in consequence of too much wet in the soil, it will not be in a good state to produce a crop until opened again by the plough when dry. We have no hesitation in attributing the worst crops we see in Canada, to the land being ploughed in the fall, insufficiently drained, and then sown in spring, without being again ploughed. The consequence is, that the soil is so close and hard when dried, that the roots of plants cannot extract or find nutriment in it; and neither air, dews, nor slight showers of rain can do the crop any good while growing upon it in the following summer. The admission of air to a certain depth in the soil, has a most beneficial influence upon the growing crop, and unless the soil is in a proper state to admit the air it should be brought to that state by proper cultivation. We are far from condemning fall ploughing, but we say that the soil that has been fall ploughed, if not in a proper state to produce a good crop, or a promise of one, should be ploughed again in the spring, so that the effect intended by ploughing for a crop, should be produced;—namely, to open, and pulverise the soil, so as to admit air and moisture and allow the roots to extend freely to obtain the nutriment from the soil, that is necessary for their growth in perfection.

MR. HEWITT DAVIS'S SYSTEM.

To the Editor of the Maidstone and South Eastern Gazette

Sir—Your paper, which is usually the means of disseminating the knowledge of many very useful chemical facts, of great importance to the farmer, contained last week a letter from Mr. Hewitt Davis, which is calculated to convey so erroneous an impression, that I have taken the liberty th send to you a few remarks on the subject.

I have no doubt that Mr. Davis is one of our first *practical* farmers; but the errors into which he has fallen only tend to show that practice without scientific principles is utterly unable to arrive at correct conclusions upon points of the highest interest and value to the farmer.

Mr. Davis says:—

"When Sir Robert Peel, in his address to the farmers at Tamworth, called their attention to guano, he did so under the impression that it might be a means for increasing the fertility of the land, and a panacea for their losses by the tariff and the corn laws. Since then the most extravagant encomiums have been published in its favour, many of which may be traced to persons interested in its sale. I am not going to deny that, as a means for assisting to raise an occasional crop of turnips for cattle food, it may answer; but I much wish to bring the attention of farmers to the fact, that at best, it can but force a crop of corn at the expense of other materials in the land; and in so doing, it will, having supplied only 300lbs. or 400lbs. of the elements of vegetation, take from the soil some tons. Its use, therefore, must, unless other sources of nutriment are supplied, cause disappointment, or a rapid exhaustion of the land, to its permanent injury. An application of 4 cwt. of guano, of which about 12 per cent. is water, is considered a full dressing for an acre of land; whilst a crop of corn takes away 4,000lbs. to 5,000lbs. of the same elements that constitute guano."

Mr. Davis imagines that the 4,000 or 5,000lbs. of corn derive their nutriment from the land. The fact is, that they derive rather more than nine-tenths of their weight from the air, and only from 7 to 9 per cent. from the soil.

Mr. D. again says—

"The rotation of cropping hitherto conceived to be the most enlightened and profitable is the four-course—of turnips, oats or barley, seeds and wheat. By beginning with a dressing, and by the consumption on the ground of the turnips, sufficient is considered to have been bestowed on the land to admit of two crops of corn and one of hay being taken without further manufacturing. That this should be successful practice, and without detriment when dung has been applied, is readily shown by the fact that that the dressing consists of from 15 to 25 tons per acre, whilst the crops when dried, take away only about five tons; and when the water from the dung has been removed, it is curious but true that the debtor and creditor account of the weight of matter applied and withdrawn may be said nearly to balance. Should the dressing

have been of guano, and allowing the same return to have been obtained (but which I do not for a moment believe possible), the acre will have lost 11,050lbs. of nutriment, 400lbs. alone having been supplied. It is clear, therefore, either that guano cannot give the corn that dung will, or, if it does, it must be by stimulating the inert matter already in existence in the soil, of course at the expense of latent nutriment, and to the impoverishment of the land."

Now, good stable dung, half-a-year old, contains about 5 or 6 per cent. of ashes. At 5 per cent., the ashes in 20 tons of manure would be 1 ton. These ashes are found to contain about 60 per cent. of silica, and about 8 or 10 per cent. of calcareous matter, not of much value to the crops. This will leave about 40 per cent. of the ashes of the dung as the really valuable matter, and will give us 672lbs of inorganic manure as the proper equivalent of 20 tons of farm-yard dung.

The subjoined table which is given in the letter of Mr. Davis, is appealed to by him to prove the assertions which he has made; whereas it, in fact, contains the most complete refutation of his opinions.

Mr. D. says:—

"An acre of land, cropped with turnips, oats, seeds, and wheat, allowing the turnips to have been fed on the ground, and only one crop of hay taken, affords, exclusive of water, the following weight of the elements of vegetation:—

Propuce of an acre in four years.

		Composition.					
	When dried.	Car.	Hyd.	Ox.	Nit.	Ash.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Oats.....	2,240	1,900	968	122	697	42	76
Ditto straw.....	3,883	2,750	1,378	148	1,073	11	140
Hay.....	3,024	2,400	1,137	120	908	50	180
Wheat.....	1,890	1,600	735	94	695	37	33
Ditto straw.....	3,340	2,400	1,161	127	935	9	168
Total.....	14,282	10,501	5,374	611	4,308	149	608

By referring to the above table, we find under the head of—"Ashes," that the whole amount of the consituents of the soil removed by crops weighing 11,050 lbs. is only 608 lbs.; an amount something less than the amount of manure furnished by 20 tons of farm-yard manure. With respect to guano, I should myself esteem 400lbs. weight rather too small a quantity to be used to obtain the greatest amount of benefit; but this much is quite certain that 600 to 800lbs. of guano, together with the inorganic substances furnished by the disintegration of any *ordinary* soil during four years of cropping, would be amply sufficient for the growth of even a larger amount of produce than 11,050 lbs., weight. I may likewise mention that good guano contains every inorganic substance required by the crops, except the silicate of potash; this latter is, however, *generally* furnished in sufficient quantities by the continual weathering of the soils.

In reference to this subject it may be worthy of remark, that the power of plants to assimilate to themselves the oxygen, hydrogen, nitrogen, and carbon, of which they obtain the greater part from the air, is *directly proportional* to the available amount of inorganic substances present in the soil.

Trusting these few remarks may be of use to many of our worthy practical farmers.

I remain, sir, yours truly,

J. C. Nesbit.

Brailes.—Good Example.—It has has often been to us a source of great regret that the *intellectual improvement* of agricultural labourers has not been more regarded in this country, and that farmers do not attach more importance to the subject than they do, or those philanthropic societies for improving the condition of the labouring classes do not take *this* subject under their notice. It is one, we consider, of the most vital importance, that some sort of rational amusement should be provided for them after the toil of the day, and that in bettering their condition, some step should be taken towards extending their general information and elevating their social intercourse. Most of them receive no education after they are 8 years of age. They can but just read and scrawl their names when they leave school to follow the routine of farm-labour; and consequently their ignorance is most lamentable, and we are most happy to find that some of the most respectable inhabitants of the village of Brailes, which is a populous agricultural district, have there established a reading room and library, and supplied it with suitable reading adapted to their station and capacity, such as the "Mark Lane Express," Farmers' Magazine," "Farmers' Series," &c., with other instructive works; and we think, if they do but appreciate its value, it cannot fail to work most beneficially. The exmple of its founder is one well worthy of imitation; and we hope and trust that his efforts may be crowned with success, and that similar institutions may spring up in districts where at present no resort for amusement exists but the public-house.

Q.Q.

Sulphate of Ammonia, its Uses, &c., for Farming Purposes.—Sulphate of ammonia is better known to the farmer than any other salts of ammonia, having been a good deal advertised of late by venders of artificial manures. This salt is a compound of sulphuric acid (oil of vitriol) and ammonia. It is not found in a free state of nature, but is obtained by adding oil of vitriol to urine in a state of fermentation; or another plan is to apply the same acid to the waste liquor (ammoniacal liquor) of the gas works, and then applying heat: the water is driven off, and the substance called sulphate of ammonia is left. The sulphate obtained from urine contains other salts, as the phosphates found in urine, and which are likely to add to its utility. The simple mode in which sulphate of ammonia is got, will show the farmer how much might be effected by a general acquaintance with chemistry. The urine of his stall fed animals might be collected, free of other matters, by having a small reservoir at one extremity of his buildings, into which, by small channels, the fluid would run from each of the outhouses where the cattle are lodged. Let the urine so collected ferment, and pour into it a quantity of the oil of vitriol, which can be purchased at the druggists' for a mere trifle. The vitriol has the effect of *fixing* the ammonia—that is, preventing its flying off, which it is apt to do when in combination with carbonic acid. The sulphate so formed is not volatile. Instead of oil of vitriol, gypsum might be used. Along with the sulphate of ammonia, other ingredients of considerable value as manures are obtained. By economizing well the means within our reach, we become in a measure, independent of the "manure venders". We have opportunities of noticing the uses to which the urine of animals may be applied, but we cannot here overlook the extreme slovenliness and inattention which are almost universally displayed in the farm-yards around us. Every one extols, and justly so, the manure of the farm-yard; yet how many of those who so loudly boast of its superiority to artificial manures, attempt to manage their dung-hills as they ought to do? "Far-fetched and dear bought" as some of our

manures are, the farmer continues to buy, whilst he daily witnesses under his own nose the loss of most valuable manure. Ammonia is constantly rising from the stalls and dung-heaps, which might be *fixed* by oil of vitriol or gypsum. The urine is allowed to run anywhere but into reservoirs or *tanks*—very often into a corner of his yard, which in wet westher serves as a *duck-pond;* or it is swept to the door of the stable or cow-house, where, by being exposed to the air, it is soon dried up; how melancholy a fact it is that these gross neglicences prevail so extensively—almost universally! There are worthy exceptions, it is true, and it is from these more enterprising farmers that we expect those improvements which agriculture stands so much in need of. Let them not confine their knowledge to their own farmsteads, but give the results of their experience to the world.—*J. H. Sheperd's second edition of Hints to Landlords and Tenants.*

Interesting Questions for the Farmer.—How many curious questions are suggested by such observations as the following! Some varieties of wheat are better suited for the pastrycook; others for the baker of bread. Some samples of barley refuse to melt in the hands of the brewer and distiller; and some yield more brandy: while others lay on more fat. The Scottish ploughman refuses bog oats for his brosemeal, or for his oaten cake, because they make it tough; and the cotter's family prefer Angus oats for their porridge meal, because they swell, and become bulky and consistent in the pot, and go further in feeding the children at the same cost. The pea sometimes refuses to boil soft; and the potato, on some soils and with some manures, persists in growing waxy. If Swedish turnips sell at thirty shillings a ton—as in large towns they often do—yellow turnips will bring only about twenty five, and white globes eighteen; while all the varieties cease to *feed well* as soon as a second growth commences. What is the cause of such differences as these? How do they arise? Can they be controlled? Can we, by cultivation, remove them? Can we raise produce of this or that quality at our pleasure? Such questions, constantly arising, have led to extended analyses of the food consumed both by cattle and by man; and from these analyses of the food consumed both by cattle and by man; and from these analyses—still far from being complete—most curious, most interesting, and most practically important results have already been obtained.—*Edinburgh Review.*

Wilful Waste of Manure.—The instructed look with amazement when, on the boarders of the Roman Campagna, they see whole hills of dung, the long accumulating refuse from the stables of the post-house; or when, on the breaking up of the winter's frost, they see the yearly collections from the farm-yards floated away on the ice of the Wolga, almost literally realizing the times of the Augean stables. We never dream that anything half so barbarous could by possibility happen among ourselves; and yet a visit to a hill-farm in Northumberland may show us the same winter accumulations emptied purposely by the side of a brook, that the waters may carry them off, or into some neighbouring hollow, where they are least in the way, and have been permitted to collect for entire generations. Such palpable waste is seldom seen indeed, in the lower country, where intercourse is greater, and where knowledge and public opinion spread more widely, and exercise a more immediate influence; and yet the no-less serious waste of the liquid from our farm-yards is still too widely prevalent even in our better cultivated districts, and among our more improving and intelligent farmers. Within the last few weeks, we have walked over the farms of the first practical farmer of the Tyne-side, and of the most celebrated breeder in Yorkshire; and yet from the fold-yard of the one the liquid was conducted by a drain into the nearest ditch, and from the cow-houses of the other, into a shallow open pond, where it stood reeking and fermenting beneath a blazing sun. What merit, as a farmer can that man claim, who, though he annually lays five tons of guano, or bones, or rape-dust, upon his farm, yet allows what is equal to ten or twenty tons of the same, to run to waste from his farm-yard in the form of liquid manure.—*Edinburgh Review,* January, 1845.

Agricultural Chemistry.—Under the above head, a Scotch paper contains the following:—"From the minute of a meeting of the Strath-Kelvin Schoolmasters' Association, held at Kirkintilloch, on the 23rd ultimo—R. Adams, Preses—we have been favored with the following extract:—'The proposal to establish in parochial shools a class for agricultural chemistry was next introduced. As some of the members required to leave early, the subject was not fully discussed; but it was evidently the general opinion that acquainting youth, particularly in rural districts, with the rudiments of agricultural chemistry, must ultimately produce very beneficial effects. A knowledge of chemistry, properly applied, cannot fail to direct the agriculturist, not only to remedies most suitable for counteracting injurious qualities in the soil, and for farmers, wedded to former customs and practices deemed successful; agricultural chemistry may not meet with that attention and encouragement which it merits; hence the importance of familiarising the young with the principles of the science. And as a great proportion of youth, especially in rural districts, obtain all their education at parochial schools, it is evident that, through the means of the schoolmasters, a knowledge of the science may be extensively disseminated. Under these circumstances, and being convinced that the introduction, to a certain extent, can be affected without injury to the numerous branches already taught in parochial schools, the meeting were unanimously of opinion that schoolmasters ought to give every facility to the formation of classes for agricultural chemistry, in all cases when properly encouraged, and likely to be appreciated.

UNDER GROUND ONION.

To the Editor of the Mark Lane Express.

Sir,—The Devonshire Farmer seems to insinuate that we horticulturists are like toads in winter—rather stupid, or some one would have come out of his hole to the help of T. C. I think the farmer is entitled to the thanks of the public for so good instructions; as I said in a former letter, very much depends in learning the habit of a plant in order to prepare the soil to grow it in perfection. Onions, like other bulbs, ought to be taken up as soon as the top begins to wither,, and well dried, and kept so. The great uncertainty of its keeping is the reason why the underground onion is not more cultivated; and were the farmer dependant upon supplying the market with onions, he would be like his cow's tail (rather behind) with only growing under-ground onions. The market gardeners are obliged to sow large breadths to pull some green to sell with radishes. If the onions that are sown abont the 8th of August run in the spring, we pull them first, or we pinch the top off, and they will bulb; it must only be the top, if further down we

should make a large opening, and would admit the wet and rot them. About this time we plant out those that are not likely to keep, and serve them in like manner by topping them in the spring. We find the Lisbin to pull green, and the Tripolian to bulb, best to sow in August. The Tripolian is not so free to run in the spring; it is not easy to save the seed, and is frequently very much mixed, unless from an honourable seedsman. Is our Devonshire farmer acquainted with the Italian Ryegrass; and the best way to cultivate it?—is it best to sow it alone, or with what crop does it succeed best, in drill or broad-cast?—how to save the seed the best way? I think its manner of cultivation is not yet followed out, or it would be more recommended. I have enclosed two leaves, Mr. Editor, about half an inch wide, and 18 inches long, to let you see it. I have never grown any quantity; having some near relations in the way of farming, I wish either to shame them or that they may learn its cultivation more perfectly. The grow green crops, and seem to think very little of its merits. As I wish my letter to be useful, I would just notice your Lancashire correspondent respecting pitting potatoes. In moist or wet soil the potatoes should be laid on the top of the ground in long or round ridges, and a trench formed at bottom to draw the wet from them. If air at top is left, as he recommends, they would in general heat themselves dry. You want to know if worms are hurtful to grass land. On some crops they are very hurtful, especially when young; and on pleasure ground they cause the poor gardener to whet his scythe oftener than he could wish, because of their casts or dung. However, I have heard say that the earth without worms would not be so healthy, as they draw stagnant water from the surface.

I am, yours, &c.,

Moors, Cheltenham, Nov. 13. R. BLAIR.

P. S.—I observed the success of growing and cutting three crops in the year; but did not say how cultivated—the rye-grass.

THE MIND.—Of all the noble works of God, that of the human mind has ever been considered the grandest. It is, however, like all else created, capable of cultivation; and just in that degree as the mind is improved and rendered pure, is man fitted for rational enjoyment and pure happiness. That person who spends a whole existence without a realization of the great ends for which he was designed; without feeling a soaring of the soul above mere merceneray motives and desires; not knowing that he is a portion, as it were, of one vast machine, in which each piece has a part to perform, having no heart beating in common with those of his fellow men, no feelings in which self is not the beginning and the end, may be well said not to live. His mind is shut in by a moral darkness, and he merely exists a blank in the world, and goes to the tomb with scarcely a regret.

Such beings we have seen, and wondered at—wondered that a mortal, endowed with so many qualities, and capable of the highest attainment of intellectuality, should slumber on in a world like ours, in which is everything beautiful and sublime, to call forth his energies and excite his admiration—a world which affords subjects for exercising every lively attribute with which we are gifted, and opens a scene of the richest variety to the eye, the mind and the heart, and of such a diversified character that we may never grow weary.

If, then, you would wish to *live* in the true sense of the term, cultivate the mind, give vent to pure affections and noble feelings; and pen not every thought or desire in self. Live more for the good of your fellow men, and in seeking their happiness you will promote your own.—*Zion's Herald.*

DECLIVITY OF RIVERS.—A very slight declivity will suffice to give the running motion to water. Three inches per mile, in a smooth straight channel gives a velocity of about three miles an hour.

The Ganges, which gathers the waters of the Himalaya mountains, the loftiest in the world, is at eighteen hundred miles from its mouth, only eight hundred feet above the level of the sea; that is, about twice as high as St. Paul's church in London, and to fall these eight hundred feet in its long course, the water requires more than a month. The great river, Magdalena, in South America, running for a thousand miles between two ridges of the Andes, falls only five hundred feet in all that distance. Above the commencement of the thousand miles, it is seen descending in rapids and cataracts from the mountains. The gigantic Rio de la Plata, has so gentle a descent to the ocean, that in Paragua, fifteen hundred miles from its mouth, ships are seen, which have sailed against the current all the way, by the force of the wind alone; that is to say, which on a beautiful inclined plane of the stream have been gradually lifted by the soft wind, and even against the current, to an elevation greater than that of our loftiest spire.—*Pottsville Gazette.*

HILLINGDON HALL; OR, THE COCKNEY SQUIRE.

Colburn, Great Marlborough Street.

No bubble-mongers ever did so much to put themselves into notice as the Anti-Corn-Law League; they have all the vanity, desire of notoriety, and furor for making public exhibitions of themselves, that so strongly characterize Young England, without, however, one atom of that unquestionable, though somewhat eccentric, talent which equally distinguishes the New Generation. The latter, not content with eloquent orations in the House, opinions of the press, or the sensations in the club-rooms, struck out a new course, and scattered their sentiments far and wide in *Coningsby*, or the novel of the season. It was a bold stroke, a good idea that told well, and one the leaders of the League saw and sorrowed at, as it drove them to the shade. Covent Garden, with its immense success, crowded houses, and for one night only, sunk to absolutely nothing by the side of it: a fact the performers were forced to admit, without turning on one "move" for regaining the attention of a discerning public. Mr. Cobden, with all his strong powers of fiction, felt himself unequal to the task, and friend Bright lacked that terrible stretch of the imagination necessary to working up his party into an agreeable and, at the same time, respectable history. A good Samaritan, with the will and the way, with a wonderful knowledge of all their different "draws" and designs, perceiving and pitying their distress, plunged at once with vigour and ability into his labour of love, and explained—laid open to every eye—their grand considerations, their real intentions, and truly philanthropic feeling, in the pages of "Hillingdon Hall, or, the Cockney Squire."

The plan of this work, as the reader will almost guess from its title, is to illustrate the life of a retired London tradesman, one Mr. Jorrocks, after having just settled at the Hall, a new purchase from the profits arising by the retail of figs, sugar, bohea, and such like commodities. Letters follow him here from a half-friend half-hanger on in town, who, having no

very crack references to boast of, and nothing very particular to employ either his teeth or his time, has just accepted a situation as bagman or barker for the Anti-Corn-Law League; and it is in this correspondence, occupying a large space in the first volume; together with the election in the last, that the "dodge," as our hero calls it, is so admirably depicted, so thoroughly exposed, and every shallow artifice and claptrap cry treated with that derisive contempt it so generally deserves. The author in this part, as indeed he does all through, delights in a humorous style, and in which he proportionately excels; but we are convinced from what we have seen—the sound argument and well-based reasoning that almost invariably accompany his drollery—he might in a more serious strain, and may-be with a greater aim, attack the ills and follies of the day.

The Squire having disposed of this "great 'Umbug," presently gets deep into the mysteries of his present situation, being led on no little by his neighbour, the great Duke of Dunkeyton, who "might be called more than a theorist," for he had some most extraordinary notions about farming and the management of property—a system so peculiar that it generally ended in beggaring the tenants and impoverishing his estates. Still to Jorrocks it is all very fine, for it is all new; and more than that, it comes from a Duke; and, accordingly, having mastered a few of the most important headings, he rattles away on Gipsey manure, Tweddle titles, Nitrate of sober, Guano, Smith of Deanstone, and the intelligence of the day, working his friends into a belief, and half persuading himself into the idea, that he really knows something of what he is always talking about. We have not, however, space to follow this very original amusing old gentleman in his divers encounters with lords and commoners, peers and ploughman, but must for "further particulars" refer the reader to the work itself—a direction that no man with an interest in agriculture, or a relish for rural life capitally described, will ever regret perusing. In conclusion, as bearing out our opinion that wit and wisdom here travel hand in hand, we will indulge ourselves with one short extract, directed rather at the ever-croaking tenant (we fear no uncommon character) than his should-be-welcome landlord:—

"Instead o' ridin' into a man's fard (Scotch cowman *loquiter*) and axin' if his barn's watter-tight and his missis i' the family way, ye should gan in ramin', and swearing', and blawin' every body up, that comes in your way, and the man will be o'er glad to slip out the front way, and niver say nothin' about repairs."

Still not invariably the best plan, Master Pigg, for we know a worthy baronet who has practised it, till like the Duke, he has "beggared the farmer and impoverished the estate."

THE STARS.—It has long been concluded amongst astronomers that the stars, though they only appear to our eyes as brilliant points, are all to be considered as suns, representing so many solar systems, each bearing a general resemblance to our own. The stars have a brilliancy and apparent magnitude which we may safely presume to be in proportion to their actual size, and the distance at which they are placed from us. Attempts have been made to ascertain the distance of some of the stars by calculations founded on parallax, it being previously understood that, if a parallax of so much as one second, or the 3,600th of a degree, could be ascertained in any one instance, the distance might be assumed in that instance as not less than 19,200,000,000 of miles! In the case of the most brilliant star, Sirius, even this minute parallax could not be found; from which, of course, it was to be inferred that the distance of that star is something beyond the vast distance which has been stated. In some others, on which the experiment has been tried, no sensible parallax could be detected; from which the same inference was to be made in their case. But a sensible parallax of about one second has been ascertained in the case of a double star, *a*, *a*, of the constellation of the Centaur, and one of the third of that amount for the double star, 61 Cygni; which gave reason to presume that the distance of the former might be about 20,000,000,000 of miles, and the latter of much greater amount. If we presume that similar intervals exist between all the stars, we shall readily see that the space occupied by even the comparatively small number visible to the naked eye, must be vast beyond all powers of conception.—*Vestiges of the Natural History of Creation.*

THE NATURE OF THE SOIL.—In the general examination of the land, the growth of the trees and copses, if there be any on the land, their species, their soundness, the elevation of their branches, and the cleanness of their bark, are among the surest marks of the quality of the soil. The plants which grow spontaneously there, even those that are injurious, afford also a valuable indication; but it is not sufficient that they grow isolated and slowly, but on the contrary, their increase should be rapid and abundant. Thus the corn or *field thistle* (*serratula arvensis*) indicates a rich and productive soil; the butter bar, or great petasites (*tussilago petasites*), an argillaceous soil; the colt's foot, (*tussilago farfara*), and the bramble, a marly soil; the common chickweed and pimpernel (*alsine media*), the common sow thistle (*soncus oleraceus*), the charlock (*sinapsis arvensis*), grow on soft and tenacious lands; while the wild radish (*raphanus raphinistrum*) grows in dry and poor lands. The black medick or nonsuch (*medicago lupulina*) is a sure sign of the marly quality of the soil in which it is found.—(*Von Theer's System of Agriculture, by Shaw and Johnson*, vol. 1, p. 28.)

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