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THE  
Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE  
OF UPPER CANADA.

L. XIII.

TORONTO, FEBRUARY 16, 1861.

No. 4

Weeds.

Nothing, perhaps, as unmistakably denotes slovenly farming as the prevalence of weeds. They constitute a sign so obvious, and the disadvantages produced thereby are so palpable to the most ordinary perception, that no one who thinks and observes at all on the subject can well be led astray in his judgment. The presence of weeds in cultivated land is without doubt an unmitigated evil, and it is impossible to conceive of even one step being permanently taken towards an improved system of agriculture that does not include clean cultivation.

It may be asked what is a weed? The general answer would be, any plant that is noxious, or injurious to cultivated crops. Professor Buckman's definition is, "Every plant not intended from the crop, and growing with the view to its hindrance." This is a definition of a weed of wide embracing character. According to the potato-plant growing amongst a crop of wheat, or a turnip amongst a crop of barley, or any of any of the cereals amongst a crop of any other species, and not intended to be there, is a weed. Farmers in general, however, do not use the term in so wide a signification; and they understand all such plants as are noxious and worth less, indigenous or imported and injurious to cultivated crops.

The weeds of the farm may be conveniently divided into two classes; although in some in-

stances both are united. Weeds that are propagated by seeds are usually annuals or biennials; and such as are propagated by roots, may be ranked among perennials.

Professor Buckman, of the Royal Agricultural College of Cirencester, England, has taken immense pains to obtain reliable results on the propagation and distribution of the more ordinary kinds of weeds. He discovered in a pint of clover seed 7,600 weed seeds; in a pint of cow-grass seed, 12,600; in broad clover, 39,440; and two pints of Dutch clover yielded severally 25,560, and 70,400 weed seeds. Supposing these samples to be sown, here were seeds enough to stock the land with weeds for many years, and which could not be extirpated but at a great expense of both time and labour. Our authority has counted 8000 seeds in a single plant of black mustard, and in a specimen of charlock 4000 seeds. The common stinking camomile produces 46,000, and the burdock 26,000 seeds; and the seeds of a single plant of the common dock produces 1,700 little docks.

From the above facts we learn with what a wonderful power of reproduction some weeds are endowed, and that the farmer often sows them, intermixed as they but too frequently are with his seed grain. It is well known in Britain that the ordinary rye-grass, which, like timothy, with us is sown with clover, is frequently saved in fields that are far from being clean, and on this account we have known farmers who would use no seed except of their own raising. Clover, timo-

thy, wheat and other grains are too commonly more or less mixed with the seed of weeds, from the foul state of the land on which they are raised, and the imperfect manner in which they are cleaned for market.

The wind is a powerful agent in propagating the growth of weeds, carrying sometimes to almost incredible distances winged seeds, such as those of the different kinds of thistle. It is a most fortunate thing that only a portion, and that perhaps a small one, of the downy seeds of the thistle, find sufficient covering on the earth's surface to vegetate and mature, or whole districts would be literally overrun with this destructive pest, which indeed is the case in some of the older settlements of this Province, particularly in the eastern section. The remedy, or what is better, the preventive of this monstrous evil is in the farmer's own hands. Such weeds should never be allowed to seed, whether they are growing in the highways or the fields. Of the most efficient means of extirpating thistles many valuable hints are to be found in recent numbers of this journal. But the principal thing the farmer has to do after he has once got his land clean and free from these unprofitable intruders, is to *keep it so*. This end can only be attained by a systematic course of thorough cultivation, the exercise of unscrupulous care in sowing only *pure* seeds, and vigilant attention to the pulling up of all descriptions of weeds wherever they may appear.

A prolific source of weeds in this country is often found in barn-yard manure. The seeds of weeds are too commonly brought into the barn with the crops, and in cleaning the grain go out into the yard with the straw, to be trodden into litter by the cattle. Unless the dung be put into mixers, and allowed to sufficiently ferment, the greater part of the weeds which it contains will be certain to grow wherever it is applied, particularly on arable land, and thus the evil becomes perpetually self-producing. If only a few neighboring farmers would resolve to combine for the extirpation of weeds, and vigilantly use the means for a few years, the evil might be kept down by ordinary caution, without involving any serious outlay, and the crops largely increased in quantity, and equally improved in quality.

One of the most common and troublesome weeds that propagate themselves by roots is Couch grass, *Triticum repens*; and familiarly known by the name of quick grass, scutch grass and *chien dent*, or dog's tooth and it is one of the most vivacious plants that grow. When this plant has got a strong hold of the soil it can be extirpated only by a thorough summer fallow; the grubber is an excellent implement for bringing many roots to the surface, when they can be collected, placed into heaps, and burnt. In order to get thoroughly rid of couch grass careful hand-picking will be sometimes found necessary, for the smallest root, not perfectly withered, when left in the ground, will be sure to vegetate, and in a congenial soil will rapidly extend itself in all directions.

Burning weeds ensures, of course, the destruction of their seeds; but this object may be attained by other means, and a larger amount of valuable manure secured. Collect the weeds and whatever vegetable matter can be obtained from the scouring of ditches, &c. into a corner of the field, mixing them alternately with layers of quick lime, and leaving the fibre to the process of decomposition, which the lime will tend to facilitate, as well as add to the amount and quality of the manure. Another method consists in placing the weeds in the centre or at the bottom of stable manure, at such a temperature to preclude the possibility of vegetation. This requires the strictest attention, lest the heat produced by the fermentation of animal and vegetable matter should fail to destroy the principle of vegetation; in which case the whole quantity of manure would be only so many stimulants, and abetting the couch grass in its future attempts to gain possession of the soil. By the treating weeds they may be made to minister to the wants of our cultivated crops, the soil kept clean, and its produce increased to a degree which to many would appear absolutely incredible.

### Land Drainage.

We have written and published a good deal various times on the subject of land drainage and it is hardly necessary now to insist upon the importance of the improvement, especially in situations where the land is of such a character

seriously to require it in order to give the protective capabilities of the soil fair scope. What we propose drawing attention to at present is the much greater cheapness with which drainage operations can now be effected, in comparison with a few years back, in consequence of the greatly reduced price at which tiles can be obtained. Mr. Wm. Gibbs, of Yorkville, is now prepared to furnish pipe tiles of the very best description, at his yard, Yorkville, at the following rates: 2 inch tiles, \$5 per 1000, each 13 inches in length; 3 inch, \$10 per 1000; 4 inch, \$15; 5 inch, \$30; 6 inch, \$50. The 1½ inch tile will be furnished at \$4½ per 1000. The length of all the sizes is the same, 13 inches. It is to be understood that these prices are strictly for cash on delivery. The rates are not more than half what the same description of tiles were sold at in this country two or three years ago, and we believe are quite as low as they are now sold at in England, where labor is so much cheaper, and drainage operations have been reduced by skill and experience to the lowest possible cost. Mr. Gibbs has from one to two hundred thousand tiles on hand, and is prepared to manufacture as many as may be required at the above rates, which we believe afford him only a very slight remuneration for the labor and material employed. There are other manufacturers in various parts of the country, who we presume will soon be able to furnish tiles at corresponding prices, but farmers who at present are unable to obtain them nearer home, if living near any of the railroads, can obtain them from Toronto at no very great cost of carriage. All strong clay lands, whether they appear naturally wet or dry, are benefitted by thorough drainage, as are all lands, heavy or light, containing springs, or subject to overflow of water, and in fact lands of almost every description, except the light and loamy soils upon naturally dry sandy or gravelly subsoils. The winter season, while the sleighing is good, is as favorable a time as could be selected for drawing home tiles to be laid in when field operations commence.

### On Breeding.

#### *Editors Canadian Agriculturist.*

Having noticed in the *Agriculturist* of Dec. 1st, an article over the signature of W. A. C., on the principles of breeding, I consider the sales there laid down all very good, (except the 11th), and I presume few, with this exception, would be found to differ from them. The objections, which I shall attempt to urge are

against the spirit of the article, which in my humble opinion is calculated to make a wrong impression, though not so intended, and it is the more dangerous, containing as it does, so much that is really good, while at the same time it would discourage experiments, the very root of all improvement.

Your correspondent is a little inconsistent in his reasoning, when, in his introductory remarks he says, "We cannot believe we have penetrated beyond the mere threshold of this art," and in the next sentence recommends for a guide "the most successful practice of modern times until further discoveries enable us to add to or modify such as already known." How I would like to ask are those discoveries to which he alludes to be made, if not by experiments in crossing breeds—the only means by which all improvement in the art of breeding has or ever can be effected—surely not by standing still. If W. A. C.'s principles had always been acted upon where would we be in the art of breeding, and where some of our most valuable breeds? And if so much has already been accomplished, what may we expect from the future? Who would be willing to say that new breeds may not be established in Canada equally, if not better adapted to the general wants of the country, than any which we now have? It is not to be expected that new breeds can be established without much care and pains, but enterprise and perseverance might accomplish much.

I have been highly interested in reading the remarks of W. C. Spooner on cross-breeding, containing much valuable information, and which I trust may be the means of inducing experiments that will result in improvements in the art of breeding.

Having commenced crossing the French Merino with the Leicester, I am encouraged to continue, and feel satisfied that they can be made profitable for more than slaughter, although Mr. Spooner alludes to the unsuccessful attempt in England to cross the Merinos and the Southdowns. But where carcass is evidently the chief object, nothing else could have been expected. In connection with this question I would beg to notice your remarks on S. King's letter in the *Agriculturist*, Dec. 16th, when giving the opinion of Manufacturers and not his own. You say, "Few who have studied the theory and art of breeding would concur with him," and dispose of his question by referring him to the letter of W. A. C., which I presume embodied the views of the Board in their decision not to allow a prize on the cross referred to. As I was the exhibitor, and consequently an interested party, allow me to ask one or two questions. As rule 11th is all that has any bearing on that point:—1st. What facts are there adduced to prove his statements? 2nd. If those are the views on which the Board decided "that no cross of distinct breeds should

be admitted for the purpose of perpetuation," what is the object sought in giving prizes for cross-breeds? The cross of French Merinos with the Leicester combine important qualities: a fair carcass, with ordinary disposition to take on flesh, and a quality of mutton not to be surpassed, a heavy fleece and superior quality of wool, which is eagerly sought for by our manufacturers will more than compensate for any lack of early maturity, which would be very slight, if any. I am really at a loss to conceive why a preference should be given to the coarse grades over the fine wool, when it is well known much of the long wool is too coarse for our domestic use, and large quantities are exported, while our manufacturers are obliged to import fine wool, with the charges for commission and transportation added to the cost of production.

JACOB RYMAL.

Barton, Feb. 6th, 1861.

In our remarks upon Mr. King's letter in the No. of Dec. 16th, we had more particularly reference to his question "Why give prizes to the grade female animal rather than the male?" rather than to the special subject of the cross of sheep alluded to. So far as our observation goes, most farmers who pay any attention to breeding at all, hold the opinion and act upon it, that in breeding to obtain good grade stock, it is better that the male animal should be as nearly as possible of pure blood. By this arrangement we can count with a greater degree of certainty upon the character of the stock that will be produced. Any farmer of intelligence would probably be found willing, if he could afford it, to obtain the services of a thorough bred Durham or other pure breed bull for his common cows of native breed, so called, and would expect to raise good grade animals from the cross; but no breeder would be willing to pay for a common road-side bull to put to his thorough-bred cows, with the view of obtaining the same result. The producing powers of the female are so slow in comparison to those of the male, that a good grade cow or heifer, representing probably fifty or a hundred similarly improved in a neighborhood, is recognised as a step in the right direction, and as the basis of further improvement, whereas to employ a grade bull to produce a score or fifty inferior animals in a season, instead of obtaining a pure-bred animal so as to ensure an advance upon the progress already made would be justly considered a retrograde step, ex-

cept in a case when the cows are of an inferior character to the bull himself. But it is believed that the country has made sufficient progress, render it unnecessary for the Provincial Association to provide for cases like the latter, however proper it might be for societies in new or remote townships. The judges at the Provincial exhibition have for many years almost unanimously repudiated the idea of giving premiums to grade bulls. And the same principle applies to other classes of animals. Our correspondent goes quite too far in supposing that the reference to W. A. C.'s letter indicates that the latter embodies the views of the Board in reference to the cross of sheep alluded to, shown at the late exhibition. The two things have no connexion. We do not know, in fact, to what decision the Board Mr. King, in his letter, alludes. There was no decision at all, that we know of, or at least no discussion of the subject. The judges reported unfavorably of the cross-bred rams, as the published report will show, and commended the ewes and ewe lambs referred to. The special committee to whom the report was referred do not think proper to attach any money prize to the commendation of the Judges. We believe their view was that if such a direct cross resulted in a good animal, the mode of obtaining it was already encouraged by the Association in giving prizes to the pure breeds from which the cross was produced. Unless it could be shown that such a cross was really important, and that a breed could be established perpetuating its distinctive features with a considerable degree of uniformity and certainty, there would not appear to be any strong ground for expecting a high award from the Association. To give a premium for the mere first result, unless it could be reproduced, would not be productive of any public benefit. And in reply to our esteemed correspondent above, Mr. Rymal, we are inclined to think that the onus of proof as to whether such a cross-breed can be established so as to perpetuate itself as a distinct breed of uniform qualities, should rest with the experimenter rather than upon the Agricultural Association, and should be established to some extent to the public satisfaction, before the sanction of a public reward should be expected. As to the question whether the Board may at future exhibitions

think it expedient to offer prizes for such a class of sheep as those referred to, we can, of course, say nothing. At the first Provincial Exhibition there were but three classes of sheep in the list, Leicesters, Southdowns and Merinos. The classes, like every other department of the exhibition, have been subdivided from time to time, and at the last exhibition prizes were offered for six separate classes of sheep. The subdivision of the fine-wooled classes has hardly kept pace with that of the long-wooled, as in fact the latter are more popular and more numerous in this country. We may state here that the long-wooled class for other breeds than the Leicesters, Cotswolds, and Cheviots, was not created altogether for the crossbreeds, as our correspondent seems to suppose; but was meant to include any other pure long-wooled breeds which might be exhibited, such as the Lincolns or others.—We think it highly probable that a further classification of the fine and medium wools will take place at another exhibition, although we are not so well satisfied that will be in the precise direction desired by our correspondent.]

### Root Culture.

EDITOR OF THE AGRICULTURIST.—Seeing an article on Root crops in the January number of the Agriculturist, and being urged by several of my neighbors to publish a statement of my crop of Swede Turnips of last season, in accordance with your request to subscribers to furnish any facts in their possession of general interest relating to Farming, I send you the following: Having for some time been increasing the quantity of land under turnips, I sowed last season six and a half acres of purple top Swedes; land, sandy loam, one main drain through the field four and a half feet deep, sowed first week in June, land drilled and manured at time of sowing. Stored of said quantity 7000 bushels, or about thirty two tons per acre, at 60 lbs per bushel. This statement to many may seem large, but it is under, not over the quantity. Four turnips brought out of the field (not out of the garden as is too common) to a neighboring exhibition, tops included, weighed together ninety eight and three fourths pounds. Not wishing to trespass on your columns from a point so far North, in giving details of the crops in the various stages of growth, process of cultivation, storing, items of expense pro and con, &c., as it would make this article longer than intended,

I remain, &c.,

R. CARSS.

Township of Fitzroy, Co. Carlton, Feb. 1861.

### Observations on the Physical Geology of the Western Districts of Canada.

BY CHARLES ROBB, C. E., HAMILTON, C. W.

From *The Journal of the Canadian Institute*.

(Continued from page 72.)

*General Inferences.*—In order to account for all the phenomena I have thus briefly sketched, we are irresistibly impelled to the conclusion that subsequently to this region having acquired its present geological configuration, so far as relates to the outline of the older rocks, the land was submerged under the sea to a moderate depth, and that large ice-islands were driven by currents from the north, charged with mud and boulders, which, as they grounded on the bottom, pushed along all loose materials of sand and pebbles, broke off all angular and projecting points of rock, and when fragments of hard stone were frozen into their lower surfaces, scooped out furrows and grooves in the subjacent rocks. When the icebergs melted, the soft and loose insoluble materials which they conveyed subsided into the bottom, filling up valleys in the ancient rocks, covering them under a mass of clay and sand where currents were powerful enough to reduce the deposits to a general level, and forming mounds and hillocks of the same, in places where such currents did not prevail. That this was actually the case is proved by independent evidence, namely, the occurrence of marine shells of recent species, in the drift formation at various heights above the level of the sea in the region drained by the St. Lawrence.

*Burlington Beach and Heights.*—Of this nature and origin I have no doubt are the remarkable formation of the Burlington Beach and Heights, which seem to have been expressly designed by Providence, the first as a natural rampart and breakwater to protect our magnificent harbour, and the latter as a bridge to facilitate our communications by land. The immense masses of clay and drift which conceal the older formation between Dundas and Copetown render it impossible to say with certainty whether the latter preserve the same precipitous and continuous character round the head of Burlington Bay as along its north and south flanks; but there is the strongest reason to believe that they do. If then we conceive the rocks to have run continuously at the same elevation round the head of the valley, and at the same time imagine the sea to have covered them as explained before, we have here precisely the circumstances which would produce all the phenomena we now behold. A bay or basin would thus be formed entirely sheltered from the currents, and into which large quantities of the floating ice-islands would be driven by the winds; and thus would be produced that irregular, rolling, and deeply indented surface which we find prevailing from the eastern limits of Hamilton to Copetown. A succession of ridges of sand and gravel, no less than seven in number, in

some places more, and in others less distinctly marked, have been traced for great distances along the north shore of Lake Ontario, and as far east as the Montreal Mountain and the slopes of the White Mountains in Vermont; each preserving, as far as the Lake Ontario region is concerned, a uniform level at their bases, and all nearly parallel to each other and to the present beach of the Lake; but the lowest of these is one hundred and ten feet above the Lake at its base, and hence there is no reason to believe that the Heights form any portion of an ancient sea beach, as the others unquestionably are.\* It is asserted by Lyell, on what seems to be incontrovertible grounds, that these beaches indicate the succession of levels of the sea as the country underwent a gradual and intermittent upward movement after the deposition of the boulder or drift formation, which was the last great change previous to the present era in the earth's history.

I may remark here that the deep notch or indentation formed by the Niagara river at the whirlpool on the Canadian side is bounded by a formation consisting exclusively of clay, cemented gravel and sand, with boulders both of granite and limestone origin, precisely similar to the formation at Burlington Heights; and that there is an obvious connection between this break in the older strata and the opening in the escarpment at St. David's, indicating that here a deep valley had originally existed, which, during the glacial period, was filled up with the materials peculiar to it.

The average depth of the clay over the area comprised between the foot of the slope of the mountain and the lake shore seems to be about twelve feet; but at the artesian well at St. Catharines it is forty feet thick. There is a remarkable break in the continuity of the red marl of the Silurian formation, commencing at the eastern limits of Hamilton and terminating at the west side of the old canal, the intervening space being filled to an unknown depth with laminated clay and sand. May not this be accounted for by the abrasion and grinding down of the older soft marl, produced by the agitation of the ice-bergs which I have supposed to be congregated and imprisoned in this locality? The clay has been pierced to a depth of from sixty to seventy feet

\* In the year 1852 in excavating through the Burlington Heights for the Great Western Railway a gigantic tusk of a Mammoth or *Elephas Primigenius* was exhumed, having been buried in the solid conglomerate at the depth of forty feet below the surface; and in the same cutting, the horn of a Wapiti or Canadian Stag was brought to light. This latter species is not yet quite, although rapidly becoming, extinct on this continent; and the occurrence of its remains, associated with those of a species which has been extinct previous to the historic period, forms an interesting link between the past and present geological epochs.

at the passenger station of the Great Western Railway without passing through it.

*Succession of Changes.*—I shall now in conclusion give a brief general retrospect of the probable succession of events which have produced the geographical and physical configuration of the region under notice.

The first event to which we must recur is the successive deposition, at a time vastly and immeasurably remote, of the stratified rocks shown in these sections. I have said that they belong to the oldest fossiliferous rocks, and probably they contain the records of the first of living forms. That they are of marine origin is indisputable from the sea weeds and deep sea shells which they contain, but no trace of fishes, of vertebrated animals or of terrestrial vegetation can be discovered in them, and it seems to have been for many ages a creation of molluscs, corals and crustaceans. These rocks remained nearly undisturbed and horizontal from the era of their formation to a comparatively modern period, during which interval the whole of the geological formations subsequent to the silurian system were deposited in different parts of the globe; and the vast succession of species of animals and plants whose histories we find written in these rocks have flourished and perished and been slowly entombed. During this interval also, and while the rocks in question still remained submerged in the ocean, they were denuded by currents, that is, portions were worn off and transported away, so as to form irregularities of surface, such as the basins of our great lakes, and such valleys as those of St. David's and the Welland Canal. They at length emerged slowly, and portions of their edges were removed by the action of the waves and currents by which cliffs were formed at successive heights, such as those I have already adverted to around Flamboro' Heights. After this event another submergence under the sea occurred, and was followed by the glacial period, which it is to be remarked was of comparatively modern date. As soon as the table land between Lakes Erie and Ontario emerged, subsequently to the deposition of the drift and successive formation of the sea-beaches, the River Niagara came into existence, the basin of Lake Ontario still forming part of the sea; and then would commence the retrograde course of the river, continuing uninterruptedly as already described, till the present time.

#### BARN YARD MANURE.

The following is a condensation of the opinions of Dr. Cameron, of the *Irish Agricultural Review*, expressed at a late meeting of the Dublin Chemical Society:

1st. Farm-yard manure, when applied in sufficient quantity, is the best manure which can be employed alone, inasmuch as it contains all the elements required to nourish every kind of cultivated plant.

2d. A mixture of farm-yard manure and superphosphate of lime and guano, formed the best fertilizer that could be employed for every kind of crop, but more especially turnip and root crops generally. The farm-yard manure supplies all the elements of the food of plants, and by its decay in soil causes the latter to have a higher temperature than it would have if manured with guano or superphosphate alone. The artificial manure was a valuable auxiliary to the natural; it contributed one, and sometimes two, and three ingredients of the food of plants; but it was especially useful as a means of forcing the young plants out of the reach of the fly.

3d. Whilst Peruvian guano, in combination with superphosphate of lime, or farm-yard manure, was a most valuable adjunct, yet its continued use, *per se*, would be attended with injurious results, and for the following reason: Peruvian guano contained a very large proportion of ammoniacal matter in relation to the amount of phosphate of lime found in it. This ammoniacal matter acted as a solvent upon certain constituents of the soil, and rendered them available for the purpose of vegetable nutrition much sooner than would be the case if no guano were applied. Thus the guano not only contributed itself to the food of plants, but enabled the plants to draw (so to speak) in advance upon the resources of the soil, which, if they did not exist in great abundance, would speedily be exhausted under the stimulating influence of the guano. *In limine*—the effects of the prolonged use of Peruvian guano may justly be compared to those produced by the adoption of the Tullian or Lois-Weedon system of tillage. In both cases the soil will sooner or later be exhausted of its store of fertilizing matters.

4th. Phosphate manure, such as superphosphate of lime, and even such as phospho-Peruvian guano, which contained a moderate proportion of nitrogenous matters, exerted but little solvent action upon the fertilizing constituents of the soil. The effects, therefore which such manures were observed to produce in the development of plants might be attributed solely to the nutriment afforded by these manures, and not to the intervention between the plant and the soil.

He recommended the employment of the natural and artificial manures in conjunction, and stated that the results of his own observation led him to recommend a mixture of two parts of superphosphate of lime and one of Peruvian guano, in preference to the use of guano alone; and this mixture might with advantage be employed on every variety of crop.

### the Botany of the Red River Settlement and the old Red River Trail.

[Continued from page 68.]

Before going on I may here describe the usual routine of travel on such trips. It is always a

rule to start early in the morning, and we generally rose at about five, and while one caught the horses and saddled them, the other would have made a fire and cooked the breakfast, which consisted generally of a nondescript dish of Mr. Buckingham's (who was appointed cook to the expedition), made with pemican, biscuit and butter. This with a kettleful of tea, as hot and strong as tea and water would make it, was eaten with a relish known only to those living in the open air and taking active exercise.—Breakfast over, things were packed, and we started generally at sunrise, and travelled till about noon, when we would stop at some good pasturage, and allow the horses to eat for a couple of hours, and cook dinner; then start again, travel till near night, or till we could find at one place the three essentials—water, wood, and grass. These we would find sometimes at five and six o'clock, or sometimes have to push on till eight or nine o'clock. When a suitable place was found the horses were let go, a fire made, and supper cooked. After supper, wood was cut, and a fire built to last all night. If possible, the horses were then brought in close to the camp and hopped—that is, had their forelegs tied together to prevent them wandering far; the cart was then wheeled close to the fire, and spreading the robes and blankets beneath it, we rolled ourselves in them, feet to the fire, and soon fell into a sleep, the soundness of which was in proportion to the fatigues of the day, the softness of the ground beneath, and the musical powers of the wolves who occasionally gave us a serenade.

We left the settlement on the 16th October, the long Indian summer, as it is called, having just then commenced. Crossing the Assiniboine River at Fort Garry, we followed the river up on the west side till we arrived at Pembina, a small settlement immediately on the American side of the boundary line. The country here, like that at the settlement and between, is a perfectly flat treeless plain, and well adapted for agriculture, the only drawback being the scarcity of wood, which is only found in narrow strips on the banks of the river, and already most of it has been used for fuel.

Crossing the Red River here, we travelled through a low swampy country, dotted with small groves of aspen, and, along the banks of small streams, scrubby oaks. Here we began to find game in great abundance, prairie chicken, ducks, and the little ground squirrel, and occasionally fox, badger, elk, and the little prairie wolf, which generally annoyed us a good deal at night. In this part of the journey the rivers were bad to cross, being deep, and the bottoms of soft mud, into which the horses would stick till assisted out. This continued for about fifty miles, till arriving at Snake Hill River, we found the river bed sandy, and the land high and dry, consisting



of long, narrow sandy ridges, bordered on each side by marsh. These ridges, a singular feature in that part of the route, were generally only a hundred yards wide, and extended five or ten miles, almost invariably in a north and south direction.

At Sand Hill, the next river, we found the country, though still sandy, very hilly and very bare of vegetation of all kinds. This gradually merged into a level prairie again, with abundant vegetation. The next river, and the largest, was Red Lake River. This was crossed with a great deal of difficulty, on account of the rapidity of the current and the narrow width of the sand bar which formed the ford. However, by putting extra weight on the cart, to prevent it being swept off the bar, and both holding the horses' heads against the current, we finally got over. But here a change awaited us. After passing through the wide strip of oak, ash, and tamarack, that fills the wide bottoms of the river, and getting a view of the open country, as far as the eye could reach nothing could be seen but a scorched and blackened mass. The fire left by some careless hunter had spread and burned everything. This was a serious thing to us, as we knew that the fire had extended till stopped by the next river. However, after holding a council we determined to push on that day, in hopes of getting grass before night. Night came, and no grass, and at ten o'clock the horses began to show signs of giving out, so we camped where the fire had spared a few rushes.

Next day, at noon, we arrived at Will Rice River, (so named from the abundant growth of tall grasses,) and this had stopped the fire.— Crossing this river, we travelled through a country with more timber than the last, and the surface of the prairie covered with boulders for many miles. At the next river—Buffalo River—the country became again very hilly, the hills inclosing innumerable beautiful little fresh water lakes, bordered as usual with oak. This continued to Detroit Lake, where the country became very rocky and densely wooded with oak, ash, beech, maple, poplar, and for the first time, we saw pine and spruce. At this lake we met a party of Ojibway Indians, with whom we exchanged courtesies, they giving us some fish, and receiving in return tea, sugar and tobacco. After remaining with us till ten o'clock, carrying on a rather unsatisfactory conversation by signs and illustrations in the sand, eating all that we could give them and stealing our tin cups and hatchets, they finally went off to their lodge. They were here catching fish for their winter's provisions with gill nets, and seemed to be taking them very rapidly. This lake, like all the lakes in this region, abounds in many kinds of fish, among which are whitefish, pickerel, perch, pike, and a little fish called goldeyes.

Leaving this lake, the trail passes through many miles of dense woods, consisting chiefly of oak and other hard woods. In these woods, and

southward, is found the Ginseng (*Arabis quinquefolia*.) Crossing Otter Tail River, Rush Lake, and some small streams, we finally arrived at civilization again, in the shape of a collection of a dozen of houses, named in Minnesota as Otter Tail City, and inhabited by travellers who purchase the furs of the Chippeways. After taking dinner here at a two-roomed hotel, for which we paid two dollars, we left the city, and crossed Leaf Mountain, the height of land at the apex of the two great water sheds of the Red and Mississippi valleys. Here, as on the rest of the route, the prevailing timber was pine and spruce, with occasional tamarack swamps. The trail here followed down the course of Leaf River till it empties into the Crow Wing River. Here the trail ended, and crossing the river in a scow, we had now a bridged road forty-five miles to the little town of Crow Wing, where we arrived on the second of November, completing a trip of something over four hundred miles in fifteen days. At this place we left our horses, and took stage, 150 miles, to the city of St. Paul, and from thence by Mississippi boat and rail-road to Canada.

I may mention here that in St. Paul I noticed several barrels of Ginseng root which had been collected by Indians and others, and was intended for export from New York or elsewhere to China. This American Ginseng is the *Arabis quinquefolia*, a different species, it is believed from the Chinese one, but nevertheless highly esteemed in that country. It is said to be used there as a medicine in cases of debility, but its medicinal properties are not so highly esteemed in this country. Its uses in China must be very extensive, as independent of the Ginseng obtained in China, and the enormous quantities exported from America, imports are registered at Shanghai of the enormous quantity of 55,000 cattiees from the 11th Nov. 1856 to 31st June 1859. This root is found in abundance in the western part of Minnesota, principally in the woods and on oak ridges, and there are persons who make large sums by collecting it and selling it at St. Paul for one dollar per lb.; by sending it to New-York, they get a much larger price. Now, as this root is so valuable, and as the climate and soil in some parts of Canada resemble that of Minnesota, I wish merely to mention the possibility of cultivating it in Canada. Hitherto the market has been supplied by indigenous growth, and the consequent disappearance of the plant in many parts of Canada and the States, suggests the propriety of adopting measures by which its production may be increased by artificial means.

A list of plants collected at Fort Garry and along the route, with their localities, and critical remarks on the more interesting and obscure species, will be published in the Botanical Society's Transactions.

### West Highland Ox.

It seems rather singular that among all the breeds of cattle which the necessity or fancy of our people has caused to be introduced into this country, the West Highland should have been overlooked. Judging from their characteristics and the circumstances under which they are reared in their native country, these cattle would be much better adapted to the roughest parts of the United States and the Canadas, than any of the breeds now kept. They have great hardihood, good fattening tendencies, and many of them, as remarked by the late Mr. Hilliard, in his "Practical Farming and Grazing," as perfect in their form as any cattle on the face of the earth. They have besides, an originality and independence of character, so striking that they are never forgotten by a person who has once seen them. The writer of the account of the late show of the Smithfield Club in the *Market Express*, having spoken of various other breeds, grows eloquent when he comes to these rangers of mountain and moor. He says:—

"It was quite refreshing to turn to the West Highland cattle. All lovers of the originality, the flash and fire of a mountain breed, paused as their eyes scanned the shaggy mantle, the defiant horns, and wild eye. It was impossible to look at Mr. Heath's second prize dun steer, without being lost for a time to the vexatious settling of butcher's greasy men. The mountain breeze in fancy fanned the cheek, the foot sampled the springy heather underneath, and the rugged form before us, with coat all palpitating with the morning dew, assumed its native dignity, and bellowed forth upon the echoing air its challenge to the leader of the advancing herd. It is reported that the Royal Ladies of England and France (Queen Victoria and the Empress Eugenie attended the show) spent more of their time in this class than all the others."

A discussion was held not long since by the Western (Scotland) Farmers' Club in regard to the breeds of cattle and sheep best adapted to different localities, and the effect of various crosses, when the conclusion seems to have been reached,—“that they would have been better off had their energies been more directed to improving the Black-faced sheep and Highland cattle.” The *Farmer's Magazine*, in giving a summary of the discussion, says, “The nature of argument ran much in this way: The native Highland cattle and sheep will live on little more than what they can find on the hills; they will eat heather, and the Shorthorns will not. While they are thus left to ‘rough it,’ the new breeds are pampered and housed, although it was maintained their own beasts would do quite as well for more food and warmth. But there was considerable difference of opinion on this point. Mr. Anderson, who opened the discussion, ‘had himself some Short-horns, but

he had the greatest liking for Highland cattle. He had some Highlanders, four years old, worth £30 apiece. When his Highlanders were four years old, he sent them to the London Christmas market, and he was never disappointed in the price they brought him. He had been disappointed with crosses, but never with Highlanders.”

“Mr. Frazer, of Fairlie, thought neither the climate nor their pastures were suitable for Shorthorns. He kept Highlanders, because he found the climate was most suitable to support that kind of stock.”

Mr. Mackay, of Dinch, would place Highland cattle in the same category as the Black-faced sheep. “Where cattle are fed on straw in winter and on heather in summer, of course a change from Highland to cross-bred cattle would be ruinous, inasmuch as a Highlander will fatten where a Short-horn would decline.”

A late writer observes—“In estimating the merits of our mountain breed of cattle and sheep, too little credit is generally given to the superiority of the meat they yield for our tables on the one hand, and, on the other hand to the small quantity of produce that supports them in their native pastures for the manufacture of this superior quality.”

The Magazine above referred to says—“The very best meat of all that comes to the table, either for flavor or fineness, is that of the Highland Ox, when he has been properly ‘done by.’ It surpasses alike the Galloway, the Devon and the Short-horn. Go to Badminton and ask the Duke how they tasted? or Mr. Thompson how they do? and the answer will be all in their favor.” The Chairman of the meeting at which the discussion alluded to was held, observed that the Highland cattle were much in demand for keeping in the parks of the English Aristocracy, and that “their flesh was also relished in the Baronial Hall.” We have noticed that on most estates of gentlemen in England and Scotland, the Highland cattle are kept to afford beef for home consumption, on account of its superior quality. Taking every view of the case, we think the writer of the article in the Magazine is entirely correct in advising increased attention to this breed.—*Boston Cultivator*.

### Importance of Agriculture.

Agriculture has been a theme for the master minds of every age, Poets have sung its praises and Philosophers proclaimed its importance. And when we consider agriculture is, (as Dr. Paley says,) the “immediate source of human provision,” that it does not merely change or modify the form of national riches, but actually creates an annual fund of wealth,—and that at the same time it is the foundation of other branches of national industry—for, (in the words of Gibbon) the products of agriculture are the materials of Art—can we wonder at the

fact? Is it not rather a matter of surprise that, even in our own country, though much has been said in favor of its pleasures and profits, comparatively little has been done towards encouraging its study,—that the first symptoms of improvements in its practice were scarcely discoverable two or three centuries ago,—and that all that has yet been done towards elucidating the principles upon which enlightened practice depends, or towards carrying these principles into operation, is the property of the present age. To speculate on causes producing this apathetic if not retrograde, practice of Agriculture in England, (for the Romans left Britain a much greater amount of practical knowledge on the subject than was employed even in the Elizabethan age,) is not our object. The argument we would urge is, that however far scanty the wants of a limited population may account for the scanty efforts made to supply those wants, the increased wants of an increased and still increasing population, are now such, as in some measure explain the increased efforts which have been made lately, and demand a continuance of them, in order that the riches of our country may continue to increase, and that a great population may obtain a great amount of comforts. In illustration of our assumption of increased wants, (upon which we base our conclusion of the necessity for an increased supply of the products of agricultural skill,) we have, according to the calculations of the Poor-Law Commissioners, the fact that the increase of population in England is 230,000 per annum, and that is an increase requiring annually 59,000 tenements, (a Manchester and a Birmingham), 27,227 cattle, 64,715 lambs, 70,319 sheep, 7,894 calves, (equal to the produce of 81,000 acres of pasture land); also, at 56 oz. daily for a man, wife, and three children, 105,000 qrs. of wheat, equal to the produce of 28,058 acres of land, at 30 bushels (which is more than the regular average) per acre. Being altogether the produce of 109,000 acres of good land required every year to feed the increase of our population. To those tinged with Malthusian scepticism, and who may doubt the capability of Agriculture to keep pace with population, it will not be necessary to urge the existence of a wise and beneficent law by which productiveness and population progress by equal steps. The fact that our present population of 15 millions is more plentifully supplied with bread than one of 2 millions was 250 years ago, is the best evidence of what has been done. And the calculation of Mr. Pusey, that if we can raise the quantity of wheat a single bushel per acre, on the lands now under cultivation in England and Wales only, it will add to our income 475,000 qrs. of wheat, which, at 50s per quarter, is equal to £1,200,000, or the interest of a capital of £24,000,000 sterling, gained forever to the country, is no small incentive to future effort. If such great results, then, arise from such limited means, when we look at our uncultivated, and our half-cultivated acres—if we ex-

amine what observing practice has already accomplished, and view the structure of inductive facts which science has already erected can we doubt either that there are 'fresh fields and pastures new' in the terra incognita of Agriculture, or that we shall be able to find them? In no branch of this agricultural inquiry, however, can we labor with a greater chance of success, than in that which relates to the nature and application of manures—and especially of those manures which are now wasted or neglected. Manures are matters which supply the plants with food—the materials from which, in obedience to certain laws, it erects, maintains, and perfects its structure. By acquiring, therefore, a correct knowledge of their economy, we acquire the power of ministering to the wants of vegetation, and of increasing the products of the soil.—Hannam 'On the Economy of Waste Manures.'

### Agriculture in English Literature.

Lavergne, the distinguished French Rural economist, in commenting on the English taste for a Country life, has the following:

The national literature, as expressive of manners and customs, contains throughout marks of this distinctive trait in the English character. England is the country of descriptive poetry; almost all their poets have lived in the country and sung of it. Even when English poetry took ours for its model, Pope celebrated Windsor Forest, and wrote pastorals; if his style was not rural, his subjects were. Before him Spenser and Shakespeare wrote admirable rustic poetry; the song of the lark and nightingale still resounds, after the lapse of centuries, in Juliet's impassioned farewell to Romeo. Milton—the sectarian Milton—employed his finest verse in a description of the first garden, and in the midst of revolutions and business, his fancy carried him towards the ideal fields of *Paradise Lost*.

But it was principally after the Revolution of 1688, when England, now free, began to be herself, that all her writers became deeply impressed with the love of country life. It was then that Gray and Thomson appeared; the first in his celebrated *Elegies*, and among others his "Country Churchyard," the other in his poem of the *Seasons*, striking in delightful sounds the favorite cord of the British lyre. The *Seasons* abound with amiable description; it is sufficient to instance the hay-making harvest and sheep shearing, the latter being already in Thomson's time, a great business in England; and among the pleasures of the country, his account of trout fishing. The angler, at the present day, may find in this little descriptive picture, his favorite art fully detailed. The feeling is everywhere lively and spontaneous—enthusiasm, real and deep, for the beauties of nature and the sweet

of labor. To these Thomson joins that quiet high religious feeling which almost always accompanies a solitary and laborious life, in the presence of the never-ending wonders of the vegetable creation. It pervades the whole poem, especially in the concluding part, where he likens the awakening of the human soul after death to nature after winter.

### The New Settlements in Upper Canada.

We copy from a pamphlet entitled "Emigration to Canada," of which a third edition has recently been published by authority of the Bureau of Agriculture, the following extracts from Reports from the Hastings Road Settlement, as showing the Agricultural capabilities of that new part of the country. The new settlements are the Hastings Road; the Mississippi Road; the Bobcaygeon Road; the Addington Road; the Opeongo Free Grant Road; and the Muskoka Road; all in that part of Upper Canada, lying north of the old counties on Lake Ontario, and between the Georgian Bay, Lake Nipissing and the Ottawa River, and which has heretofore been generally considered not very promising for agricultural settlement. The report from the Hastings Road may be taken as a fair sample of the others.

They all convey the most favorable accounts of the settlers, and of the large amount of produce they have raised on their newly cleared lands. The Hastings Road Settlement is very nearly the centre of Canada West, and due north from Belleville, on the Bay of Quinté. Mr. Robert Bird, in a Report received by the department on the 6th September, 1860, thus writes:—

"I have just returned from the Hastings Road, and received your favour of the 4th of August, requesting information about the crops on the said road. In reference to them I never saw any thing like them on the whole length of the Hastings Road, from Elliot's, on the fifth range, five miles north of the Peterson Line, and about fifty miles from the Town of Madoc. The principal part of all kinds of grain is now out of the way of frost. In consequence of the early frost of last year, almost the earliest on record, the farmers managed to get in their grain in such good time this year, that it is now almost ready to harvest. Some very fine fields of Spring Wheat were cut on the 18th of August. I have examined a good portion of this crop, and have no doubt but that it will yield from 30 to 40 bushels to the acre. I can hardly give you a description of the oats: I never saw such in any country; they stand from three to five feet high,

are well filled, and are nearly all about ready to cut. I cannot say what they will produce to the acre, but I think not less than from 60 to 70 bushels. Potatoes are abundant and no rot has yet appeared; Turnips are promising as well as the people desire; peas and rye are very good, but there was not much of these sown; very little Indian Corn was planted, but I saw some pieces that will be a fair crop unless some very unusual frost cuts it off. Hay is an extraordinary fine crop: there will be enough of timothy hay in these settlements for the farmers' own use, and a supply for all the lumbermen. It was from thirty to forty dollars per ton last winter, but it is thought it will not be more than ten dollars next winter. You would be surprised to see the amount of grain the settlers have got this year. There was not much Fall Wheat sown, but what there was did well. I was at Elliot's on the 18th August, and I never saw crops of all kinds of grain, and although the land is so new he has an excellent garden of vegetables. He put in a small quantity of Fall Wheat, and I never saw better; it was then ripe and the straw was bright: I rubbed out one head and I counted 72 large plump hard grains. The land seems well adapted for Winter Wheat. The family is very industrious, they appear contented and happy; their prospect is good. The inhabitants throughout the whole length of the road, with very few exceptions, appear well satisfied with their location. The Doyle settlement, near the Peterson line, is a very prosperous looking place, and will soon be a very fine portion of the country. They have abundance of produce, but they require the completion of the Mills on the Papeau River to make them comfortable: the man who is in possession of the mill site has not the means to erect it, and something should be done to get up the mills forthwith. There is a good farming county north, south, east, and west, of the site. Mr. Robinson is doing a great deal for the settlement of the road and the lands adjoining; his Saw Mill is in full operation at Lamab's Lake, and he will have a grist mill in operation about the middle of October. He has spent all his means in improving this part of the settlement, and deserves government encouragement. The settlement east of the Hastings Road, on the Peterson line, is in a very prosperous state; their crops are excellent, and they are making large improvements. I saw Messrs. Lake and Vanallen, who moved there from Thurlow. They told me they would not move back on any account; their families are contented and happy. There are eight families in the settlement, even so many miles back, and a prospect of a great many more soon going in.

"I have taken particular notice of the country for ten miles on either side of the Hastings and Peterson Line of roads. The quality of land on the first three ranges is of a lively loamy soil of a reddish cast, very warm and productive, but

this part is much interspersed with shallow rock, intermixed with granite, and does not contain more than forty-five per cent. of good ploughland.

"The fourth and fifth ranges of Townships are chiefly all good farming land, averaging seventy-five per cent. of good land for 18 or 20 miles wide, east and west of the Hastings Road. The Townships of Burton and Harcourt, through which we have just finished the Government Road will be a very fine country: the soil is more mixed with clay and, although hilly, there are no ledges or rock, and but few rolling stones. The timber is chiefly Maple, Beech, Basswood, and Birch, with a good supply of spring creeks and mill privileges. Many of the settlers have informed me that they have written for their friends and acquaintances, and are daily picking out lots of land for them, so that the increase of settlers will, I expect, soon be more extensive than it has been; and I am satisfied the prospect of Settlers would be far better than if they went to the Far West. The settlers are enjoying excellent health, there being no illness of any consequence amongst them. The freedom from fever and ague, and the abundance of pure spring water, are very great advantages which our Settlers enjoy over those of the Far West. I have only to add that prices of every description of farm produce are remunerative and even higher in the back settlements than in the frontier towns, on account of the extensive manufacture of lumber which is carried on without intermission, and which is likely to continue for ages, as the supply is unlimited."

Mr. M. P. Hayes, the Crown Land and Free Grant Agent at Madoc, thus writes:—

"I am in receipt of your letter of the 4th inst., enquiring about the crops and the condition of the Settlers on the Free Grants, &c. I spent the last five days of July and the first weeks of this month on the road, and I am happy to be able to say the prospects are most encouraging. The season has been every thing that we could wish for so far, and was largely taken advantage of by the Settlers. The Hay crop was nearly all cut and saved, and the yield is large. The quantity of Timothy Hay saved on the road this year will be more than quadruple that of any former year. The little Fall Wheat that was sown this season looks well.

The Wheat Midge, which had attacked the wheat in the old Townships, has not appeared as yet in the new back Townships. Spring Wheat has been extensively sown and was looking splendidly when I was up. They are cutting it in some places now, and are well satisfied with the yield. Immense quantities of Oats have been sown and Potatoes planted, and both are looking very well. I cannot give you particulars of the yield as yet, as it is too early; but in the meantime you may calculate upon every crop being above the average, unless some unforeseen change take place in the next week or two.

### Use the Fanning Mill Thoroughly.

It will pay to clean grain thoroughly before offering it for sale. A careless or dishonest man has little reason to congratulate himself upon having sold a quantity of chaff, cockle seed, and other foul stuff, for the price of wheat. Dealers in grain have sharp eyes for anything that affects the market price, and they readily detect wilful or careless neglect to properly clean the crop, and a reduction of from two to four or more cents per bushel is the consequence. It requires but a few pounds weight of refuse among grain to greatly damage its appearance, an amount which would bring fifty cents if sold at the price of wheat will reduce the market value of twenty-five bushels from four to five cents per bushel, thus entailing actual loss, instead of gain, as some, by their practice, seem to suppose. Grain merchants sometimes take advantage of the fact, that foreign matter in grain deteriorates the market value below the actual damage caused by its presence. They put large quantities of poorly cleaned grain through the fanning mill, take out one or two cents per bushel in the weight of foul seeds, etc., and are able to sell the improved grain at four or five cents advance per bushel, all of which might have been realized by the producer, in return for a few hours extra labor.—*American Agriculturist.*

### Light for Animals.

A correspondent of the *Homestead*, in an article on fattening hogs, gives the following advice:—"One more important item of advice, and that is, locate your pen where your hogs can have the benefit of light. I don't mean merely *daylight*, but the full, bright light of the sun: it will add to their cheerful contentment, as it does to the human species, and physiologists declare that, other things being equal, families who occupy apartments in the sunny side of dwellings are the most healthy and happy. Although the comparison may, to sensitive nerves, appear odious, still it is beyond our power or province to change the established laws of nature. I never knew of a hog or any other animal, kept under the north side of a barn or other building, where the dampness and darkness is never penetrated by the sun's rays, and where the animal was employed as the scavenger for other animals, to be sleek-looking, fat, clean or quiet. I have seen many a pen where the mud and offal was two or three feet deep, and no place of retreat left for the poor occupants upon a higher spot, excepting the floor, and that unfurnished by straw."

Linen was first made in England, in 1253.  
Hats were invented for men in Paris, 1403.

## Agricultural Intelligence.

## Stock to Australia.

EDITOR AGRICULTURIST.—I inclose to you an article from the Fifeshire and Galloway Courier, of December 11th. Will you be kind enough to insert it in your valuable Journal.

Being personally acquainted with Mr. Fraser, I can recommend him to any of my Canadian friends who intend to import horses or cattle. He has had long experience as a salesman of high standing in Liverpool, and is worthy the utmost confidence both for ability and trustworthiness.

WM. RODDICK.

Port Hope, Feb., 1861.

CLYDESDALE STALLION "BLACKLEG."—Advices of date 24th September by the last Australian mail inform us that the ship *Gosport*, having on board this valuable horse, arrived at Melbourne on the 7th of that month. The voyage, although a protracted one, was nevertheless peculiarly favorable for the safety of the animal: the weather prevailing during the whole passage. He was landed free from either bruise or scar, and in perfect health. The importers express their extreme satisfaction with the selection made by their agent, Mr. Fraser, of Fairfield, Liverpool; as also with the whole of his arrangements in respect to fitting out, shipping, &c. A great number of the farming classes around had paid a visit to see the horse since reaching his destination, and it is considered that his enterprising owner will clear fully £500 by him during the first season, which commences in that country early in October. It appears that previous to the actual purchase of this highly valuable animal from Mr. Crawford, Strathblane, Stirlingshire, at least two other parties had the refusal to him at the same figure, £500, but stickled at the seemingly unprecedented price, and it speaks highly in favor of the discrimination and judgment displayed by Mr. Fraser, who, without taking counsel or advice from any one whomsoever, promptly concluded a bargain which promises to turn out a lucrative one for his Gallovidian friends at the Antipodes.—These gentlemen, writing to Mr. Fraser, say:—The article in the *N. B. Agriculturist* was copied into all the colonial papers, and you are known to me in Australia. I think you would get a good many orders if inclined to act in the same capacity again. Our place is visited by scores from all quarters, every one anxious to see the horse.

During the past year, four asteroids and four comets were discovered. The number of asteroids now discovered is sixty-two.

## Horticultural.

CORRECTION.—In the *Agriculturist* of January 16th, page 49, Mr. Sharpe of Lockport, is made to say, that "in transplanting *Pear Trees*, he is in the habit of cutting off all the top," &c. It should have been printed *Pear-h Trees*.

## Orchard Culture in Canada.

TO THE EDITOR OF THE AGRICULTURIST.—On examining the Transactions of our Board of Agriculture for the year 1859, I find a couple of essays on Fruit Culture, one by Dr. J. Beattie of Nichol, County of Wellington, the other by Mr. R. B. Werden, of Picton, Prince Edward County, which contain so much information of exactly the character most needed, that I can not refrain from calling attention to them again through your columns. The Fruit Growers' Association of Upper Canada is endeavouring to bring out just such information as this, and I trust that these gentlemen will not fail to become members, with many others, whose united experience will form a more safe guide to the Canadian fruit planter, than any information we now possess.

There is indeed a large part of Canada, by far the larger part, to the climate of which it is a stretch of courtesy to apply the term "temperate." To me it seems that as the country is denuded of its forests and laid bare to the sweep of our wintry winds, the severity of the climate is only increased, and the vital powers of both animal and vegetable constitutions put to the greater test. Intense cold, as indicated by the fall of the thermometer merely, is not so trying to animal and vegetable life, as are the long continued blasts of frosty winds which, by constantly and rapidly changing the surrounding air, take off the last remaining particle of warmth and cause the frost to penetrate with an intensity of which it is wholly incapable in a still atmosphere. To these winds, so prevalent in Canada West, am I disposed to attribute in part the death of many of our fruit trees, and believe that were the orchards of Canada well protected from their freezing breath, some of the varieties now considered tender would be found quite hardy. Not that I dissent from Dr. Beattie's proposition that some varieties of even the apple are *constitutionally* unadapted to our climate, but that could the trees be protected from these winds the number of such varieties would be decreased.

But the winds are not the only evil from which the trees suffer in our climate. It may indeed seem strange to attribute a share of our trouble to the pleasant sunshine, but nevertheless it contributes its part to the sum of our troubles. In February and March it is no uncommon thing for a night of intense cold to be followed by a clear bright day, in which the unclouded sun shining on the long, naked trunks of the trees, aided and intensified by the reflection from the

snow, very suddenly thaws the exposed side, which is again suddenly and severely frozen when the sun declines. The result of this is that on the side of the trunk so exposed the bark is killed, sometimes all the way from the ground to the branches, in width varying from a narrow strip to one-third of the entire circumference of the tree. I think Mr. Werden must have had some experience of this, for he speaks of "trunks blighted and scalded, and the bark peeling from the body of the trees."

Now, in addition to the bad "nursery practice," (so well pointed out by Dr. Beattie, and in relation to which I may hereafter ask leave to say something,) I believe I have indicated two causes of the death of apple trees, the latter of which is considerably dwelt upon by Mr. Werden, though he attributes it to the sun in August instead of March. Could these evils be removed, not a little would be accomplished towards the successful culture of the apple in the bleakest and coldest parts of the Province. Nor is there physically any difficulty in overcoming these obstacles; and yet there is a difficulty, one less easily removed than might be supposed, and that is in the *habits* of fruit growers.

The most direct and simple method of protecting our fruit trees from the winds and sun is indicated in each of these essays, and practised by the several writers. By growing the trees in the orchard with low heads, allowing the branches to form near the ground, they are protected by the undulations in the surface of the country and the very farm fences scattered to windward, breaking the force of the winds and causing them to sweep over their heads. Mr. Werden plants his trees twenty-five feet apart, with an additional tree in the centre of each square. The reduction in the size of the tree by forming the head low is thus more than compensated by the greater number of trees planted on an acre, and by thus bringing them nearer together they protect each other, something like the trees in the forest, the winds sweeping over them not through them. And where this is not sufficient, a belt of evergreens set on the windward side will be found a great auxiliary. The bodies of the trees also are protected from the effects of the sun by their own branches, which break the rays direct and reflected, and protect the trunk from all great and sudden changes of temperature. So then the protection of the trees from injury from these causes is at once simple and efficient; for Mr. Werden says that his trees "have stood the hard winters of 1855, '56 and '57 wholly unharmed, while others with long trimmed up trunks, are blighted and scalded and the bark peeling from the body."

But our orchard planters are so accustomed to taking an annual crop of grain or hay from the orchard, or of making it the pasture ground of their young cattle, that it is not an easy matter to break up this habit. They see at once that wagon loads of grain and hay are not to be

thought of among such low trees, and that the cattle would soon make a finish of them—and the plow, the plow; that constant friend and almost constant companion of the husbandman, how can he use that in such a place? and his heart faints at the thought of being obliged to leave that tried and trusty implement behind when he goes to take care of the orchard. *Take care of the orchard?* Yes, that is what he calls "taking care of the orchard." What if the plow do cut up and destroy all the small, fibrous roots that lie near the surface, an apple tree ought to do without them. What if the whiffle trees now and then rub the bark off, the wound will grow over again. What if the rank growing grain and the spreading grass drink up the gentle showers and evening dews, he has seen apple trees grow well enough with grain and grass among them. He has seen so many orchards live, and grow and bear fruit in spite of such treatment, that he has begun to believe that this is the way to *take care of an orchard*.—And just here it is, in the *habits of the husbandmen* will be found one of the greatest difficulties to be surmounted.

But Canadians are men of intelligence and thought. These essays are a step in the right direction, and though their authors are in this respect in advance of their age in orchard culture, yet their pens and their practice are the very things needed to convince us of our errors and to induce us to follow their example. They can not do their countrymen a greater service in the matter of fruit growing, than to show them the advantages of such orchards, and prove by the results of their own experience how much better suited they are to the peculiarities of our position and climate. For my own part I have these essays as a step towards the breaking up of old prejudices and the establishment of a new system of training and planting fruit trees adapted to the exigencies of our position. If the gentlemen would be kind enough to furnish you for publication a more detailed statement of their method of pruning their trees in the orchard and of cultivation, it would be a very valuable paper. We also wish to know if they find any inconvenience on account of the limbs which loaded with fruit falling to the ground? Whether the fruit hangs any better on the trees or more come to the barrel in a sound and unbruised condition, than with high pruned trees? Whether the trees bear full crops any oftener, so that on taking an average of years they shew any less number of barren seasons? Whether the trees are any more or less liable to the attacks of insects, such as the apple tree borer or the beetle? Whether any varieties are found to endure the climate in this way, which prove tender on the seven feet of trunk system? Whether the number of bushels of fruit per acre is more or less? Whether the trees come into bearing sooner or later? Whether the cultivation and management of the orchard and gathering the

fruit, require greater or less care and labor?—Whether the fruit is likely to be smaller or larger, any more or any less scabby or otherwise imperfect? And if we could also have a list of the different varieties that have been tested in their respective localities and found to be not sufficiently hardy, the Canadian public would be under further obligations. Will not the gentlemen be kind enough to let us hear from them through the columns of the *Canadian Agriculturist*. Yours truly,  
St. Catharines Nurseries, D. W. BEADLE.  
Feb. 7th, 1861.

### Fruit Growers' Association.

We copied an account of the recent meeting at Hamilton of this Society, from a daily newspaper in our last, but having since received the official report, we insert it also in full. It will be found to contain matter of much interest to fruit growers:—

#### FRUIT GROWERS' ASSOCIATION OF UPPER CANADA.

The annual meeting of this association was held at Hamilton on the 16th and 17th of January last. Representatives were present from the counties of Wentworth, York and Peel, Lincoln, and Brant.

The first Vice-President, Dr. Hurlburt, read an address on the climate of Canada, as adapted to the culture of the grape.

It was then moved by Mr. Beadle, seconded by Mr. Leslie, that a vote of thanks be given to Dr. Hurlburt, and that he be requested to furnish a copy of his address for publication in the *Canadian Agriculturist*.—Carried unanimously.

Three interesting reports on the fruit crops of 1859 and 1860 were then handed in and referred to the committee on publication; one of them was from the late Judge Campbell, of Niagara, the first President of the Association, another from Mr. Arnold, of Paris, and the third from Mr. Beadle of St. Catharines.

The Association then proceeded to the election of office bearers for the ensuing year, with the following result:

Judge Logie, Hamilton, President.

George Leslie, Esq., Toronto, 1st Vice-President.

D. W. Beadle, Esq., St. Catharines, 2nd do.

Dr. Hurlburt, Hamilton, Secretary.

J. A. Bruce, Esq., Hamilton, Treasurer.

The following Committees were then chosen:

THE GENERAL FRUIT COMMITTEE.—Messrs. Fleming and Gray from York and Peel; Messrs. Freed and Murray from Wentworth; Messrs. Taylor and Smith from Lincoln; Messrs. Arnold and Whitlaw from Brant. To act with

the office bearers of the Society, and the delegates from the affiliated Horticultural Societies.

COMMITTEE ON PUBLICATION AND MANAGEMENT.—The President and Vice-Presidents and Secretary.

SUB-COMMITTEE ON ORCHARD FRUITS.—Messrs. Leslie of Toronto, Beadle of St. Catharines, and Murray of Hamilton.

SUB-COMMITTEE ON OTHER FRUITS.—Messrs. Arnold of Paris, Gray of Toronto, and Meston of Hamilton.

At an adjourned session held in the evening, the President in the chair, it was resolved to take up the consideration of fruits suitable for general cultivation in Upper Canada.

Mr. Leslie of Toronto, Mr. Beadle of St. Catharines, Mr. Arnold of Paris, and Mr. Smith of Grimsby exhibited a great variety of winter apples, among which were two new varieties, the Wagoner and the Dominic, shown by Mr. Beadle. Mr. Arnold also exhibited several varieties of winter pears, and Mr. Smith specimens of cherries and strawberries preserved in spirits.

The Association then entered upon the discussion of fruits, beginning with apples—early apples.

1. *Early Harvest Apple*.—It was agreed that this apple is of first rate quality, the tree a good bearer, and generally hardy. Mr. Arnold said he had found it rather tender at Paris.

It was agreed to recommend it for general cultivation.

2. *Red Astrachan Apple*.—Quality varies from very good to best; tree very hardy; a good bearer. Mr. Leslie considered it a good bearer, and a good market fruit. Mr. Beadle recommended it as a good cooking apple. The President said if allowed to remain too long on the tree it is apt to become dry and mealy.

It was agreed strongly to recommend it for general cultivation.

3. *Duchess of Oldenburgh Apple*.—Quality varying from very good to best. Tree hardy, a vigorous grower, prolific; a good annual bearer, a very beautiful fruit.

It was agreed to recommend it for general cultivation.

4. *Sweet Bough Apple*.—A large fine fruit, sweet; tree a slow grower and tender in some localities, a moderate but sure bearer. The best sweet apple.

It was agreed to give it a further trial before recommending it.

5. *Early Strawberry Apple*.—Quality good; tree hardy; a moderate, and in some localities, a shy bearer; fruit pretty; considered by one of the members of the association to be a poor, very acid, inferior fruit.

It was agreed not to recommend it.

6. *Early Joe Apple*.—It was generally agreed that this fruit is of the best quality for the table.



Tree of dwarf habit, very hardy, and a good bearer.

It is recommended strongly as a dwarf tree for garden culture.

7. *Summer Rose Apple*.—Quality good, very good, and in some places best; tree hardy. A moderate and in some places a good bearer. Mr. Arnold stated that it is an abundant bearer on Paradise stock. Considered a feeble grower by Mr. Beadle.

Recommended for further trial.

8. *Primate Apple*.—Quality good, best; large apple; tree hardy; a stout grower; bearing qualities from fair to very good.

Recommended for further trial.

#### AUTUMN APPLES.

1. *St. Lawrence Apple*.—Quality from very good to best. Mr. Beadle said it was variable in quality and apt to be insipid. It is of better quality towards the north than in the southerly parts of the Province. Tree hardy and vigorous; prolific in some places, in others only a moderate bearer.

It was agreed to recommend it for cultivation

2. *Fameuse Apple*.—The best table apple of the season; tree very hardy and very prolific.

It was unanimously agreed to recommend it strongly for general cultivation.

3. *Fall Pippin Apple*.—Quality from very good to best; tree hardy, but said by Mr. Leslie to be occasionally tender; moderate bearer.

It was agreed to recommend it for general cultivation.

4. *Porter Apple*.—Quality very good; tree hardy; moderate grower; bears well. Not generally known.

It was agreed to recommend it for further trial.

5. *Keswick Codlin Apple*.—Fruit large; best quality for cooking; tree very hardy; grows vigorously; is an early and good bearer; considered by some very prolific; good for cooking before it is ripe.

It was agreed to recommend it for general cultivation as a cooking apple.

6. *Hawthornden Apple*.—Fruit large and handsome; good for cooking; tree very hardy; an early and good bearer.

It was agreed to recommend it for general cultivation as a cooking apple.

7. *Golden Sweet Apple*.—Fruit very large; good quality; best sweet; good for market; tree very hardy; a moderate grower and a good bearer.

It was unanimously agreed to recommend it for general cultivation.

8. *Twenty Oz Apple*.—Fruit very large; tree hardy; growth stocky; a moderate bearer.

It was agreed to recommend it for further trial.

9. *Gravenstein Apple*.—Best in all respects. It was unanimously agreed to recommend it for general cultivation.

10. *Benoni Apple*.—Mr. Arnold said it was of the best quality; tree hardy; a moderate bearer.

Not having been sufficiently tested, it was agreed to recommend it for further trial.

11. *Jersey Sweet Apple*.—Fruit large; best quality of sweet apples; tree hardy; a moderate and in some places an abundant bearer.

It was agreed to recommend it for further trial.

12. *Fall Jenettin Apple*.—Fruit large; quality very good; tree hardy; a fair bearer.

It was agreed to recommend it for further trial.

13. *Hubbardston Nonsuch Apple*.—Fruit large; very good both for cooking and eating; tree hardy; a good grower and abundant bearer.

It was agreed to recommend it for further trial.

#### WINTER APPLES.

1. *Baldwin Apple*.—Best as to size, quality and keeping; tree tender to the north and west, elsewhere hardy; an early and good bearer.

It was agreed to recommend it as one of the best winter apples for general cultivation.

2. *Rhode Island Greening*.—One of the best winter apples; good for market; tree very hardy at Hamilton and St. Catharines, but found to be tender at Paris and towards the north.

It was agreed to recommend it for cultivation.

3. *Spitzenburg Apple*.—Best winter table and best market apple; tree hardy but a slow grower; a good bearer at Hamilton; at Toronto, St. Catharines and Paris found to be only a moderate bearer.

It was agreed to recommend it for cultivation.

4. *Ribston Pippin Apple*.—Best quality for table and market; tree hardy; a moderate grower; a good and early bearer.

Agreed to recommend it for cultivation.

5. *Roxbury Russet*.—Quality good; large sized apple; hardy; a rambling grower. At Paris Mr. Arnold found it only moderately hardy, and a moderate bearer; elsewhere it is found to be prolific.

Agreed to recommend it particularly for its keeping qualities.

6. *American Golden Russet Apple*.—Fruit larger than Pomme Grise; a fine keeper; a good market fruit; tree hardy; a good grower and good bearer; the best russet.

Agreed to recommend it for cultivation.

7. *Northern Spy Apple*.—Fruit large and hangs well on the tree; best quality; keeps well; a handsome apple; hardy everywhere; a good bearer.

Agreed to recommend it for general cultivation.

8. *Swaar Apple*.—Fruit of best quality; tree hardy with a rambling growth; a good bearer of well cultivated in sandy, but poor bearer in clayey soils; at Paris tender in nursery; a good keeper.

Agreed to recommend it for cultivation.

9. *Newton Pippin*.—Agreed to defer consideration of this fruit.

10. *Pomme Grise Apple*.—Best small russet; good keeper; good all the winter; tree very hardy; a good bearer.

Strongly recommended as a table apple for all parts of the Province.

11. *Yellow Bellflower Apple*.—Fruit large; has a large core; quality very good for eating and cooking; tree hardy; a poor grower and poor bearer. Not recommended.

12. *Belmont Apple*.—Fruit large; yellow; good for table and cooking; tree very hardy; a good bearer.

Agreed to recommend it for further trial.

13. *Wagener Apple*.—Fruit of best quality; large and beautiful; tree very hardy; very prolific; an early bearer; best in flavor, beauty, growth and hardiness.

Agreed to recommend it as a new apple of great promise.

14. *Talman Sweeting Apple*.—Best winter sweet apple; very hardy in some localities; does not succeed well at Toronto; prolific; a good keeping apple.

Agreed to recommend it for further trial.

15. *Beauty of Kent Apple*.—Fruit large; good for cooking; very handsome; tree hardy; very good bearer.

Agreed to recommend it for further trial.

16. *Colvert Apple*.—A good cooking apple; very handsome; a fast growing tree.

Agreed to recommend it for further trial.

17. *Westfield seek no farther Apple*.—Fruit of best quality; good size; tree hardy and vigorous in some localities; does not succeed well at Toronto; a good bearer and keeps well. Recommended as worthy of further trial.

18. *Vandevere Apple*.—Varies with soil; best on light, poor on heavy soils; not worth growing at Toronto; a good bearer on suitable soil. Not recommended.

19. *Rambo Apple*.—Quality very good; fruit of medium size; keeps through January; tree erect and hardy; a prolific bearer. Mr. Leslie says it is very hardy at Toronto, but fruit small andabby.

Agreed to recommend it in suitable situations.

20. *Dominie Apple*.—Fruit very handsome and good; a new apple; promises well. Recommended for trial.

At an adjourned meeting, held on the follow-

ing day, the first Vice-President in the chair, the consideration of Pears was taken up and the following varieties were mentioned:

1. *Madeleine Pear*.—Fruit of best quality and earliest; small sized yellowish green; tree hardy; a strong upright grower; very good bearer.

Agreed to recommend it for cultivation.

2. *Bartlett Pear*.—Tree tender about Toronto; too tender for northern parts of the country. Where it suits it is a first rate fruit either as a dwarf or a standard; an early bearer; hardy at Paris and Hamilton, where it is a universal favorite.

Recommended for cultivation south of the line of the Great Western Railway.

3. *Osborne's Summer Pear*.—Fruit of best quality; medium size; prolific; tree hardy at St. Catharines; very good; one of the best at Toronto.

Recommended for further trial.

4. *Tyson Pear*.—Best quality of fruit; medium size; tree hardy; succeeds well on the quince; very good and very productive at Toronto and Hamilton.

Recommended for general cultivation.

5. *Belle Lucrative Pear*.—Best quality; size full medium; hardy and very prolific at St. Catharines. Poor at Paris and Toronto and tree tender. At Hamilton fruit good in every respect; high flavored.

Recommended for further trial.

6. *Beurre de Giffar Pear*.—Quality best; hardy but slender.

Recommended for further trial.

7. *Louise Bon de Jersey Pear*.—A universal favorite at Toronto, Hamilton, and Paris. Poor in flavor at Catharines; very hardy and prolific; a good grower.

Recommended for general cultivation.

8. *Flemish Beauty Pear*.—Quality good; fruit pretty; a great bearer and early; succeeds well at Toronto; does not succeed well on quince.

Recommended for general cultivation on pear stock.

9. *Beurre d'Anjou Pear*.—Good; flavor best; fruit large; tree hardy; does well on quince; moderately productive; succeeds well at Paris and Toronto.

Recommended for further trial.

10. *White Doyenne Pear*.—Quality best; tree perfectly hardy at St. Catharines and Hamilton, where it is considered one of the best pears; not very hardy in Paris and Toronto; fruit not known to crack in Canada.

Recommended for further trial.

11. *Seckel Pear*.—Quality best; small size; tree hardy and prolific; rather a slow grower; hardy every where.

Recommended for general cultivation.

12. *Duchesse D'Angouleme Pear*.—A fair grower; tree rather tender and a poor bearer; moderate bearer and hardy at Catharines and Paris. Fruit large; none better as a market fruit.

Recommended for further trial.

#### STRAWBERRIES.

On motion, the list of apples was laid on the table, and the Strawberries taken up.

*Wilson*.—Excellent flavor; enormous bearer; very hardy.

Recommended for general cultivation for market.

*Jenny Lind*.—Early, large, prolific; at Toronto it ranks next after early scarlet.

Recommended for general cultivation.

*Burr's New Pine*.—Finest in flavor of all the strawberries; hardy and a good bearer.

Recommended for general cultivation.

*Trollope's Victoria*.—Late, large, excellent flavor; hardy, not valuable for market.

Recommended for gentlemen's gardens.

*Monroe Scarlet*.—Had proved a good bearer, of good flavor, and hardy at Paris, Grimsby, and Toronto; but at Toronto did not bear well.

*Triomphe de Gand*.—Had failed at Paris, but every where else it proved to be of the finest flavor, hardy, and one of the most promising new varieties.

*Hooker*.—Much admired for size, beauty, and flavor; but was tender in many localities, and liable to winter kill.

#### RASPBERRIES.

*Franconia*.—Mr. Leslie of Toronto,—strong cane; berry dark red; prolific; the most hardy variety; flavor best; very valuable for market. Mr. Holton of Hamilton,—something too acid for table; best for cooking; flesh firm; plant hardy. Mr. Freed, of Hamilton,—not as luscious as some, but very good; valuable for market. Mr. Murray of Hamilton,—very good in every respect.

Recommended for general cultivation.

*Brickle's Orange*.—Mr. Beadle of St. Catharines, had fruited it only one year, it bore the winter well without protection, and fruited well; fruit rich and fine. Mr. Leslie, of Toronto, found it tender. Mr. Holton, of Hamilton, had grown it on poor soil, and then it proved a poorer bearer than Franconia; flavor very good; plant not very hardy. Mr. Freed, of Hamilton,—quite hardy with me; strong grower; left it unprotected for three years, and it bore good crops each season; flavor good; not so high as yellow Antwerp.

Recommended for further trial.

*Fastloff*.—Mr. Leslie, of Toronto,—a strong grower; not very hardy; occasionally bears heavy crops; berry large; flavor very good.

Mr. Arnold, of Paris,—is very tender, produced a small crop; fruit very soft; can hardly be gathered without bruising. Mr. Freed, of Hamilton,—cane and fruit very tender.

*Knevelt's Giant*.—Mr. Holton, of Hamilton,—I have had it three years on a poor, light soil; canes very strong; tolerably hardy; not quite as hardy as Franconia. Good bearer; berries very large and continue in use a long time; flavor best; the flesh hardly firm enough to carry well to market.

Recommended for further trial.

The following resolutions were passed:

Moved by Mr. Arnold, of Paris, and seconded by Mr. Freed, of Hamilton,—That the *Canadian Agriculturist* is worthy of the support of this Association and of Canadians generally, and that it is our privilege as fruit growers and our duty to send communications for publication in its columns.

Moved by Mr. Smith, of Grimsby, and seconded by Mr. Beadle, of St. Catharines,—That an abstract of the proceedings of this meeting be sent to the *Canadian Agriculturist* for publication.

Moved by Mr. Beadle, of St. Catharines, and seconded by Dr. Cragie, of Hamilton,—That in stead of the next meeting being held at the time of the Provincial Show, there be two meetings during the season, the first at Hamilton on the day of the July show of the Horticultural Society, and the second at Toronto on the day of the September Show of the Horticultural Society, and that the Secretary give at least ten days notice of these meetings by circular to each member.

The next annual meeting of the Association to be held in the Mechanics' Institute, at Hamilton, to commence on the third Wednesday in January, 1862, at 12 o'clock.

### On the Planting and Taking Care of Fruit Trees.

*Editors Agriculturist*.—As the time for transplanting trees is drawing on, and as many of your readers, no doubt, contemplate extending their orchards, I would suggest the following questions, which although not new contain matter of so much importance to those interested in fruit growing, that they will bear repeating at this season of the year. And if your readers will give the result of their experience, a mass of information will be elicited that will be worth preserving.

1st. Is it best to head back trees in transplanting, or not? If headed back, how much and is it best to cut off all, or only part of the branches close to the stem, or to cut off the ends of every limb? And should peach, pear and apple be treated alike?

2nd. How deep should trees be planted?

3rd. Is mulching or stirring the ground the best preventive against drouth?

4th. What crops, if any, should be planted in a young orchard?

5th. Are trees grown in any particular section of country better, from being acclimated, for transplanting in that section, or are trees, like the seed of grain, potatoes, &c., the better by being brought from a distance?

6th. Will cattle destroy trees? What a question some of you readers will say; yet I am sure that some people think they will not, for I have seen horses, cattle, sheep, and hogs, run among young trees for weeks at a time.

I do not ask these questions for personal information, for my own mind after some twelve years experience is perfectly made up. But in travelling through the country, and seeing so large a percentage of trees dead, or stunted in growth, I have come to the conclusion that these things are not properly understood, or at least not properly cared for.

The following fate of a young orchard, (the type of many,) was related to me by a nurseryman.

Well, Mr. Jones, how are those trees doing that I sold you? I suppose that they are beginning to bear some.

Why no, they aint, they did not do very well.

What was the matter with them, were the trees not good?

Well, yes, I think they were, but the fact is the field I planted them in was sowed down to rye the Fall before, and very many of the trees died; perhaps it was the rye. I then seeded down to clover, the clover took well, and made fine pasture in the Fall, I then turned my calves in, and thought they could do no harm, but one night the cows broke in too, and between them both I have hardly a tree left.

R. N. BALL.

Niagara, Feb. 15, 1861.

## The Dairy.

### On Preserving Milk.

By DR. LYON PLAYFAIR.

Milk consists of caseine, of sugar of milk, and certain salts dissolved in water, in which, also, are suspended little globules of fat, or butter. These globules are surrounded by a shell or skin, which is supposed to be coagulated caseine. The soluble caseine, being a nitrogenous body, is very apt to run into putrefaction. In summer, it does not do so readily, because, the temperature being elevated, the sugar of milk is converted apparently into grape sugar by the agency of lactic acid, then into alcohol, and the alcohol into acetic acid. These changes are induced by the primary action of oxygen upon the caseine. This action is then imparted to the other con-

stituents, the atoms of which being once set in motion, readily undergo the changes described. The acetic acid being formed by the agency of air on the alcohol, acts upon the soluble caseine and coagulates it, or renders it insoluble. It is thus removed from the action of the oxygen of the air, and may be kept for some time without entering into putrefaction. Such are the changes which milk undergoes in summer; but they are quite different in winter.

In winter the first action is that of oxygen upon the caseine. The temperature is not sufficiently elevated to cause vinous fermentation, as in summer. The decay of the caseine generally passes over to putrefaction—that is, the atoms are transformed more rapidly than they unite with oxygen. A putrid smell now arises.

Good butter cannot be made from milk which has undergone this change. The cause is, that butter always contains a certain quantity of caseine, which it is difficult to remove. When incipient putrefaction has taken place, it cannot be arrested by ordinary means, and imparts itself to the bodies with which it is in contact. It is for this reason that the greatest part of the butter made in winter has a rank putrid taste.

The principal object in view in the preservation of milk in the winter, is to prevent the commencement of this putrefaction. One method has been termed *scalding* the milk, and is generally used in dairies. It consists in heating the milk until the oxygen of the air acts upon the caseine, and forms a pellicle (or skin) on its surface. The milk should then be left to perfect repose. The pellicle excludes the air from the soluble caseine. The partial oxidation by which the pellicle was produced, is effected at too high a temperature to enable the decay to pass into putrefaction. When this operation is skillfully performed, the milk remains quite good for four or five days. But there is a risk of failure in this process, and it is only adapted for small dairies.

The best method, which I have seen used in practice with much success, seems to be, to induce the acetous fermentation in the milk. For this purpose, the cream or milk, being placed in a proper vessel, should be surrounded with hot water. The heat which I find to answer best is from one hundred to one hundred and ten degrees. A cloth may be thrown over the whole to retain the heat, and as the water cools, it should be removed and replenished with hot water of the above temperature. In a few hours the cream acquires the smell and taste of vinegar. The changes which I have described above ensue. In large dairies, a portion of this soured cream or milk may be added to fresh cream or milk, which should be kept in a room possessing a temperature of sixty degrees. By adding this soured cream to the fresh milk, we furnish an acid, by which the sugar of milk is converted into grape sugar. The curd then acts upon the grape sugar, and converts it into alcohol. The

latter, by oxidation, becomes acetic acid, and thus the whole mass of milk is rendered sour, the caseine coagulated, and therefore protected from immediate putrefaction. The butter made from such soured milk is quite sweet, and destitute of that rank taste which distinguishes our winter from our summer butter. But if incipient putrefaction has once begun in the milk, all this will be of no avail, because it is communicated to the insoluble caseine. Milk perfectly fresh must therefore be used. Fresh milk soured in this way will last for many days, and give risings of cream for a considerable time. This practice, so far as I am aware, is not a general one, though it is worthy of adoption. In summer, of course, no such operation is requisite, as it is done at a sacrifice of the skimmed milk. One great cause of putrefaction in milk, in the want of absolute cleanliness in the dairy. If a drop of milk fall on the table, it should be dried and washed off with care, for its putrefaction causes the evolution of a putrid gas, and this imparts its state of putrefaction to the remainder of the milk.

With respect to making butter, scientific explanations can be of little use to practical men. The theory of churning is very simple. By agitation the globules of butter are broken, and made to unite together in a mass. The introduction of air during the churning, aided by the heat at which the cream or milk is, occasions the formation of lactic or acetic acid, and this coagulates the caseine, and thus assists the separation of the butter. In summer, when the heat prevents the ready coherence of the butter, a quantity of cold spring water thrown in after the buttermilk has formed, often effects the desired end. The temperature is thus depressed, the butter rendered solid and more coherent, while the air contained in the water aids the formation of the acid, and coagulation of the caseine. The only thing, in a scientific point of view, to attend to after the separation of the butter, is to free it from butter-milk or caseine. If the caseine be suffered to remain, putrefaction ensues, and the butter acquires a rank putrid taste. Its separation is, therefore, of the first moment. The cause of the superiority of certain foreign butter, which retains its flavour and taste for a considerable time, is more due to its freedom from caseine than to any mystery in its mode of preparation.—*Transactions of Royal Society.*

### Selection and Management of Dairy Stock.

The report of the Committee of the Massachusetts Board of Agriculture on Cattle Husbandry contains many valuable ideas, worthy of the attention of all interested in the subject. From that part devoted to Dairy Stock, we select the following paragraphs:

“The general aspect of the dairy animal is thinner, sharper, and more angular than a feed-

ing animal. When selecting dairy cows we should look for a wide chest, small head, wide between the horns and eyes, small muzzle, thin, sliin neck, sweeping smoothly into the shoulders, the shoulders at the withers thin, back straight, hips wide, and wide in the pelvis, and deep in flank, ribs a little flat, belly somewhat large, udder large, extending well up behind and forward, her general appearance delicate and feminine; but, after all signs, the best recommendation a dairy cow can present, is a list of long line of ancestors that have been famous for milk. Heifers may come in at two years old, but are enfeebled in health and constitution by the practice, and will not hold out in a dairy to so great an age as those that come in a year older. The best dairy bull should have a broad, short head, horns spreading from the side a little in front, and turning upwards, back straight, a little sharp at the withers, widening backward to the hips, slightly sloping rump, belly large and legs short and fine, tail long and tapering, with a heavy brush of hair at the end.

Much of the profit of a dairy cow depends upon a plentiful supply at all times of rich food. The variation in the quantity of milk they yield, is principally owing to the difference in the nutritive quality of the food they receive. Cows receiving food, poor in alimental matter, fall away in milk. Add to the nutritive properties of their food, and they immediately increase their flow. The quantity of milk then does not depend on giving a particular kind of food, but on giving a quantity equal to the support of natural waste of the body, and leaving a remainder to be converted into milk.

Farmers err very much when they undertake to keep more cattle than they have means to sustain in the best condition, especially in winter. The result is, their cows come out of the stable in winter weak and feeble, and struggle through half the summer before they are in condition to yield milk in quantity more than equal to paying expenses. Dairy cows should at all times be in good condition. They should receive their food at regular intervals; their milk should be drawn at stated hours, and by quick gentle milkmen, and they should be treated all times with the utmost kindness. In short, every means in the power of the dairy farmer should be used to insure their tranquility. Harsh treatment exerts a very injurious action on the milk, rendering it less buttery, and more liable to acidity.

Respiration is a species of combustion. Every breath we inhale oxygen of the atmosphere, which unites with and consumes the carbon or fatty matter of the food. When cows are worried and driven too rapidly, they breathe more frequently, inhale more oxygen, and more of the buttery portion of their food is consumed, leaving less to be converted into butyric acid milk. Warmth is a substitute, to a certain

ent, for food. Cows, when warm, and comfortable, will consume proportionately less food, and it is well known to all experienced dairymen, that their cows yield more milk in warm, pleasant days, or when they have the run of a warm, well sheltered pasture, than on cold, rainy days, when they run in cold, bleak pastures. When cold, they inhale more oxygen; the result is a combustion of more of the carbon or oily part of the food, and less remains to supply the lacteal vessels with rich milk."

### Goshen Cheese.

From an article on the manufacture of cheese by the *Ohio Farmer*, we extract the following paragraphs on the celebrated Goshen cheese:

There are towns in rocky, bleak New-England realizing annually more profit from cheeses, whether estimated per acre, per cow, or per pound, than most western towns where the land is far handsomer and apparently more favorable every way for the service of a dairy. We may take, for example, Berkshire Co., Mass., and Litchfield Co., Conn., which lie contiguous to each other, and belong to that broken, rocky, mountainous region which extends northward to the valley of St. Lawrence. We shall encounter facts like the following. The town of Goshen, in extent about nine miles by five, and not less than a third of this a barren rock, swamp, will exhibit an annual exportation of cheese ranging from a million and a quarter to a million and a half pounds. All this brings, to the best markets, from one to three cents per pound above the price of ordinary western cheese. It ought, however, to be said here, that Goshen being the favorite name in market, and as this region of country is concerned, and that probably through the influence of the enterprising cheese merchants of the last generation, the cheese-makers who reside near the borders yet within the adjacent towns on every side, as Winchester, Torrington, Canaan, Cornwall, and Norfolk, quite generally prefer to sell by way of Goshen, and in this way, swell somewhat the gross amount which passes through the hands of the Goshen merchants, leaving their brand.

There are in this region a considerable number of manufacturers who keep few or no cows themselves, but buy the curds of the neighboring farmers. It is a curious fact, those farmers, and farmers' wives, (for the mistress of the house says "runs the curd,") who know how to get the greatest number of pounds of curd from a given number of quarts of milk, are also those who receive the highest price for the pound for their curds; that is to say, the greater the amount of curd that can be obtained from a given amount of milk, the better will be the curd or the quality of the cheese that is made from it. And this difference in amount, and the management of the various curd-makers, is considerable—enough to astonish

those who have no actual acquaintance with the matter. It is said sometimes to equal a fourth of the whole amount.

Flavor—the great point in cheese-making—is here carefully attended to. The farmers however, contend that there is something unusually delicious in the grasses of these mountainous counties of New-England, from the Sound to the St. Lawrence; especially do they claim a freedom from bitter nauseous weeds in the pastures. But after all, we believe that the delicacy of flavor in these New-England cheeses, is for the greatest part, owing to the scrupulous neatness and nicety with which they are treated throughout the whole process of making, together with a precise, judicious and skilful, but indescribable seasoning of curds. Perhaps we ought to add, as an indirect cause, that the largest and best cheese-makers have this for their whole business. They do almost nothing else. To this art and its process they devote the study of their lives.

**CLOUTED DEVONSHIRE CREAM.**—The milk being put into tin or earthen pans, of ten or twelve quarts, the evening's milk is placed next morning, the morning's next evening, on iron plates, heated by a small stove, until the whole body of cream is formed on the surface, which being gently examined with the edge of a spoon or ladle, till small air bubbles, denoting the approach of a boiling heat, begin to rise; the pans are then removed, and the cream remaining on the milk till quite cold, is transferred into a churn or open vessel, and moved by hand with a stick about a foot long, and a peck of six inches diameter at the end. The cream before churning is the celebrated Devonshire cream; but the butter from it is found to separate more freely, and sooner coagulate into a mass.

**USE OF GLASS MILK PANS.**—L. V. Bierce of Akron, Ohio, has been trying glass milk pans and finds that they are much superior to tin or metal. The milk of the same cow put partly in a tin and partly in a glass milk pan was found to differ greatly in its keeping qualities; the milk in the glass pan retaining its sweetness long after the milk in the tin pan had become sour and thick. The same quality of glass milk pans has been observed by a dairyman in England.

### Veterinary.

#### How to Detect Imperfect Vision, or Blindness, in Horses.

The novice in horse-flesh may have good grounds for suspicion as to the existence of imperfect vision, or blindness, when the horse's ears are in constant and rapid motion, and directed in quick succession to every quarter from whence

the least sound proceeds; his action is also lofty and faltering, and he lifts up his feet and replaces them on the ground as if stepping over some obstacle, when there is actually nothing to impede his free progression. But notwithstanding that these symptoms should be sufficient to create suspicion, there are other causes, besides imperfection of vision, by which the same or similar symptoms would appear in horses. For instance, if a horse, with the most perfect pair of eyes, were led from a dark stable into the blazing sunshine, the sudden contraction of the pupil of his eye would render it impossible for him for a few seconds to see but very indistinctly; hence would arise the same symptoms of uncertainty in his movements until the pupil becomes steady after the sudden contraction. The dilation and contraction of the horse's eye furnish the principal means of ascertaining whether the blindness exists in one eye or both, as the pupil varies in size, according to the degree of light which is brought to bear upon it. In a dark stable the pupil is expanded, so that a greater proportion of light may fall upon the corner; but if the horse is led to the door of the stable, the pupil will contract, so as to exclude more light than could be endured, and if suddenly exposed to the sun the aperture will be but little closed; therefore the novice should carefully notice these variations in the pupil, whether they contract or expand equally by the increase or decrease of the light, which he may readily perceive by advancing the horse's head to the open door or window of the stable, and backing him again into the darkness until he is satisfied as to the perfection or imperfection of the horse's eyes. But if the horse should be examined in the open air the novice should first notice whether both pupils are of exactly the same size. After this, he should carefully place his hand, so as not to alarm the horse, over each eye, ascertain whether it also dilates; then passing his hand over the other eye, ascertain whether it also dilates to the same extent; and if he should still be uncertain, let him place both hands, at the same time, in the position of shades over both the eyes, and he will at once perceive (if his own sight be good) whether they are perfect, and, if not, which of the two is imperfect.

We would suggest to all owners of horses the importance of admitting plenty of light and pure air into their stables, for we are quite satisfied nothing tends more to injure the eyes of a horse, than dark or badly ventilated stables. Every man who keeps horses for the purpose of assisting him in earning his livelihood would be neglecting a very important portion of his business; and gentlemen who keep them as a means of administering to their pleasure would be wanting in gratitude to the noble animals, in not attending to the lighting, draining, and ventilation of their stables; to say nothing of their imperative duty to treat those animals with that kindness

and consideration which all true men will acknowledge they richly deserve.

In every town and village in the United Kingdom may be found stables without ventilation, except through the chinks of the doors, and, with very few exceptions, *drainage* is a precaution rarely thought of in connexion with a stable. We have frequently been present at the opening of these miserable dwellings for horses, the first thing on a summer's morning—as we have no doubt many of our readers have also—when the state of the atmosphere has been sufficiently stifling to engender a variety of diseases among the suffocated occupants. We repeat that there are thousands of stables in which the door is the only aperture for the ingress or egress of air, and even this is, in most instances, closed—both when the horses are at rest, or at work or exercise. Thus they have, while in the stable, rather “horse-oven” (in very hot weather) breathe the same air over and over again, inhaling the ammonia which is constantly rising from the interstices of the irregular pavement or mud floor; and this is not only a source of misery to the horse, but by acting most injuriously on his eyes, entails a serious loss to the owner, by decreasing his value. There are few respectable builders now-a-days, who do not understand the erection of well ventilated and vastly improved stables; but where owners of horses cannot afford to have their old stables rebuilt, they might, at least, before the bad weather sets in, break out windows to admit light and air, and also, at a very trifling expense, drain the floors, and thus, by keeping the air pure and sweet, neutralize the effects which stifling and impure atmosphere will sooner or later have upon the horses.—*Irish Agricultural Review.*

## The Breeding of Racing Stock.

BY BALINASLOE.

If any person were to ask me a question as to what kind of a horse would pay him best to breed, I should decidedly say “Racehorses,” if he has the knowledge, the means, and the convenience; but without these three essential requisites it would be madness for him to attempt it.

A man may be the best judge of a hunter or any other kind of horse in the world, and the best of them, and yet know little more of the blood of sires or dams, as regards racehorses, than the man knows about breeding hounds, whose attention has been always directed to bull-dogs or Italian greyhounds. If he he may get the advice and assistance of a competent person to purchase his stock for, and if he also succeeds in getting a trustworthy and accustomed to their entire management,

...takes a part of his time to make himself acquainted with the pursuit, he may get on tolerably well, as the breeding of race-horses does not require the long experience that training them does. In the latter pursuit, a man's daily, I may say *hourly* attention is required to watch whether a horse or colt trains on, or falls off in his work. But in breeding, if a certain dam is selected with judgment to a certain sire, and she is afterwards properly fed and sheltered, and so that no accident (that can possibly be foreseen) is likely to occur, barring the customary attention, she is no further trouble for many months to come. A watchfulness is requisite about the mare she is expected to foal, and perhaps (but not often) some little assistance also, but when the foal is dropped, and a few days old, he and his dam require but the common attention of being supplied with food and water. I may here say, however, that some breeders for the turf give the foal an additional quantity of food over and above the natural supply from the dam, in the shape of cow's milk; this is considered necessary, and no doubt advantageous, in rearing stock that has to run at two years old, in accordance with the present absurd fashion.

The outlay to procure sires and dams must necessarily be heavy; for, though there may be scores of thorough-bred mares to be purchased as cheap as common dunghill-bred ones, who would buy their progeny? Mares must either have proved themselves runners, or what perhaps just as good, be descended from running blood, the sire the same. There are many mares who could never run in the front rank themselves, yet when put to a proper sire, have produced stock that could comparatively *all* run respectably. Let a mare, though never worth a plate she stands upon as a racer herself, if of fashionable blood, produce a colt that it is said can run; from that time she is a comparative fortune, or at all events a real good income to her owner.

I have used the term *sires* in lieu of *sire* in all items as regards outlay in commencing the pursuit of a turf-breeder. It may be said that a man purchasing—say, about a dozen brood mares, has no occasion for than one sire; nor could he have if his stock were three times the number, so far as the mere propagation of animals is concerned; but it must strike every one that it is next to impossible to collect together a number of mares all possessing similar qualities; there have been "flyers," others a sort of breeders, technically speaking, "could run all night." It must be clear that the same sire would not be a proper one for mares of such different qualities. The flyers must have a strain of such blood as Whalebone, for instance, got into the progeny, while the honest "Stayers" would require some of the Velocipede, or such blood, for their sires; and, even with the most judicious crosses of this kind, excellence is not *always* to be at-

tained; but without good sires, good mares, and good judgment, it is next to impossible to produce stock that will distinguish themselves on the turf.

I hardly know a pleasanter mode of turning his money to account and occupying the time of a country gentleman, than breeding stock of any sort—what sort must be, of course, determined by the breeder's taste, and, as I have before stated, by the different appliances and facilities he may have for breeding. All breeding is profitable if properly and liberally carried out: I say *liberally*, for whether a man breeds thoroughbred or cart stock, oxen or sheep, without a liberal system is adopted, neither will answer.

There is one great advantage in breeding race-horses—this is, the very early age at which they can be sold. Colts are mostly bought from breeders as yearlings, and those that are in favor with the sporting world will fetch, in many instances, a hundred guineas, and fillies seventy, and I do not know of any domestic living animal that will fetch the like price at so early an age. It is true a cart colt may only cost (so far as relates to his sire) a guinea or two—a racing colt will cost, at all events, ten or more, unless a sire or sires are kept by the breeder; but against this we have to keep and feed the cart colt for three years before we can consider them marketable, and then we are fortunate if he turns out worth fifty.

I have said that it would be policy for a breeder to keep more than one sire; but suppose he gives a couple of thousand guineas for two sires, he need not place the loss of the interest of these two thousand guineas to his breeding expenses: his sires may very properly be placed to the profit side of his book, for, independent of their services at home may be reckoned the mares of other breeders that would be sent to them, so that, beyond his services to his owner, a very moderate horse will bring in, say a hundred or a hundred and fifty in the course of the season. Alluding to the character of thoroughbred stock, I have said that "if in favor with the sporting world," they will fetch good prices. But this favor can only be gained by three modes:—first, getting blood on both sides that is in favor with the racing public; secondly, it must be known that they and their dams are liberally and judiciously fed and managed; and thirdly, letting it be publicly known that never, under any circumstances, is one of them tried, or kept back for the owner's use. I would recommend all breeders of racing stock to implicitly keep faith with the public in this respect. (Of course, I mean in cases when a man breeds to sell. Breeding race-horses for an owners use, to *run*, is quite a different affair, and one I need not touch upon in this letter.

We will suppose that, among a dozen yearlings a breeder produces, from the opportunities, he has of observation, he has one among them



that has every promising quality a yearling could have, as far as regards size, constitution, temper, soundness, and style of going—the temptation is great to keep such a colt back; do this only and your prestige as a breeder and seller of untried stock is gone. In such a case as the one alluded to, it would be quite compatible with keeping his faith with the public, if, at his annual public sale, he were to give a friend the benefit of his opinion as regarded a particular colt among them, because they are open to public competition, and if that friend chooses to outbid the public, nothing can be said against his right to do so. In most things, as well as breeding blood stock, if a man keeps his faith with the public, that public will hold their faith in him; and if a man depends upon public opinion for the value of everything he has to sell, he must be very weak minded indeed if he risks losing its confidence for any flattering advantage, which, after all, may turn out a failure.—*Irish Agricultural Review.*

**SAVING HORSES FROM BURNING STABLES.**—A correspondent of the *New-York Tribune* recommends:—

“Let the sides or walls of the ground floor of stables, of whatever shape they may be built, consist entirely of doors or rollers on an iron track; the upper floor or hay loft, being supported on brick, stone or iron pillars. Let movable mangers be attached to those pillars. In this way the horses' heads would be towards the doors. If a fire happened the doors could be rolled aside, the mangers lifted up or knocked down, and the horses liberated in a few minutes. Farmers, livery stable and omnibus men would find such a mode of building their stables as cheap as any other. Besides, while such a plan would tend to save life, it would permit a more thorough ventilation and cleansing than can be given to stables built in the present style.”

**VITALITY IN HORSES.**—Some experiments have recently been made in France by persons skilled in the veterinary art, with the view of ascertaining how long horses may live without food in certain contingencies, as for example, being shut up in besieged places. The following results having been noted: A horse may live for twenty five days without solid food, and merely drinking water. He may live seventeen days without eating or drinking. He can live only five days when consuming solid food, without drinking. After taking solid aliment for the space of ten days, but with an insufficient quantity of drink, the stomach is worn out. The above facts show the importance of water in the sustenance of the horse, and the desire the animal must feel to be supplied with it. A horse which had been deprived of water for three days drank eleven gallons in the space of three minutes.—*The Bulletin.*

## Transactions.

### Abstract of Report of Agricultural Societies received in the year 1860.

*Continued from page 89.*

#### TOWNSHIP BRANCHES.

**EDWARDSBURGH.**—Amount of subscriptions, \$68.50; share of public grant, \$69.50. Paid in premiums, \$103.50; expenses, \$27; balance in hand, \$2.50.

#### GREY.

**COUNTY SOCIETY.**—Amount of subscriptions, \$68; balance from previous year, \$30.51; balance of Government grant for 1858, \$180; deposited by township branches, \$225; Government grant, \$514.76; sundries, \$8.25; total, \$1085.52. Paid township branches, \$525; premiums at fall show, \$227; expenses, \$82.86; balance in Treasurer's hands, \$250.66.

#### TOWNSHIP BRANCHES.

**DURHAM.**—This branch society merged its funds in those of the county society for the year, and has therefore no further proceedings to report.

**HOLLAND.**—Forty-two members, subscribing one dollar each. No further report of proceedings.

**MOUNT FOREST.**—Forty-nine members subscriptions, \$57; balance from 1858, \$41.18; Government grant, \$79; total received, \$176.18. Paid in premiums, \$75.25; expenses, \$21.39; balance in Treasurer's hands, \$79.54.

#### *Extracts from Report.*

Situated in a part of the country so recently reclaimed from the primeval forest, cannot be expected that a system of improved husbandry can as yet have been established in this locality; and consequently we occupy a less advantageous position than our more fortunate brethren of the plough in old settlements. But time and perseverance will remove the disparity, and give us the benefit of improved agriculture.

Under present circumstances it would be worse than folly to deceive ourselves, or others, by a practice too common on such occasions as the present, by representing a state of things as really existing, which exist only in imagination or desire. Boasting will not

a purse or a granary. Deception or falsehood, however flattering to vanity, seldom or never attain the object sought. We will therefore, adhere strictly to truth, being assured that such a course will ultimately be productive of the greatest amount of good.

We would gladly endorse the opinions so frequently expressed in the public papers, in regard to the abundant crops of the present season, were we convinced that such is the fact; but knowing from experience that the yield of the present crops, like those of other years, fall far short of what is represented, we are reluctantly constrained to confess that although the present crops are on the whole superior to those of last year, yet they are such as will not produce repletion in our exchequer.

The small quantity of fall wheat sown here last season, being nearly worthless from the effects of rust and spring frosts, our remarks will therefore apply to spring wheat only. Probably in a few instances from 25 to 30 bushels per acre has been realized, but may safely be affirmed that the average does not exceed 15 bushels; and that notwithstanding the favorable appearance of the fields previous to the time of cutting, the quality of a great portion of the grain was not so good as it was generally expected to be. The early sown produced the greatest quantity, and best quality; the late being darker and somewhat injured by the frosts which occurred when the grain was nearly ripe. Fortunately, the greater part being Scotch, or Pife, it was not injured by rust, neither was any other kind of spring wheat affected thereby to any great extent. It is pleasing to note the absence of insect predations.

Barley being not much grown here claims less attention than the importance of the crop would seem to deserve. Those who cultivate it have no reason to complain of the yield or quality; indeed there is good reason to believe that it is a remunerative crop, and that farmers would find it profitable to grow more extensively, being attended with little loss, and not so liable to injury as the wheat

Early sown oats may be considered a fair crop, exceeding 30 bushels per acre; but the late sown were, like the wheat, injured by summer frosts.

The growing of peas appears to be on the increase in this quarter; the beneficial effects

of which will doubtless be apparent, and be duly appreciated. Although the yield, in consequence of the unexhausted state of the soil, producing too great luxuriance of haulm, does not exceed 30 bushels per acre, yet that luxuriance is beneficial in retarding, and preventing the growth of wild grass and weeds, mellowing the soil and in some measure making the crop a substitute for naked fallow. Few in this neighborhood have yet been able to afford much space for fallow, and the difficulty of working it properly among stumps, has deterred many, who are well convinced of its necessity and utility, from putting it in practice. However, great numbers of these unsightly, troublesome, and injurious objects, are fast approaching to that stage of decay that they may be easily removed; and in order to give sufficient time for that work, and for the removal of stones, a naked fallow is indispensable. This accomplished, there will be no excuse for shallow ploughing. The subsoil plough will then be in request, and the dawn of a new era in the agriculture of this locality will have commenced. It is gratifying to know that when the stumps are removed, the soil of this part of the country presents no impediment to deep ploughing, and that those who have adopted the practice, as far as practicable under present circumstances, receive their reward in the comparative abundance and superior quality of their crops.

The scarcity and high price of grain in the spring of last year, and the consequent want of a sufficiency of good seed, experienced by many, has had the effect of causing a greater breadth of land to be sown with turnips; thus unconsciously providing for an unexpected contingency, and wringing some good out of a great amount of evil. That extra crop, supplying in some measure the deficiency of food for stock, occasioned by the failure of the hay, which was so complete that where clover had not been sown the mower's task was as unprofitable as that of shearing a pig.

Although the cows of this locality are considered good milkers, the stock of cattle having been chiefly brought here, or the descendants of those thus brought by persons from the old settlements, who have hewed out a home for themselves in the bush; yet however well suited these cattle have been to the circumstances of the early denizens of the forest, the time has now arrived when their

places should be supplied by superior stock. Will the farmers of the neighborhood become liberal subscribing members of the Mount Forest Society, so as to enable it to purchase a thorough bred animal for the purpose of improving the stock of these townships? Improvement in that particular will assuredly be followed by the same results as the improvement in sheep; the owners of which obtain more than double the price, and in other ways doubling their profits, compared with those who rear inferior stock. The members of this society who own an improved breed, invariably take the prizes at our exhibitions.

The excellent samples of dairy produce exhibited at our last show, were equal, but could not be superior to those of former exhibitions, and it would seem that further excellence is not to be attained, at least in the article of butter. All that appears to be desirable now, is that the products of the dairy should be larger. It would be well if those who devote much of their attention to the dairy would adopt a system of management that will enable them to ascertain with accuracy the quantity made from one or more cows during a given time, so as to arrive at a correct knowledge of the profits of dairy farming, and that they would communicate the result of their observations and experiments with a view to giving it publicity.

We can make as good cheese as any produced in the States, but we do not produce enough to supply even the home demand; consequently we do not enjoy an established reputation for cheese making, and we are thus driven out of our own market. By carefully maintaining the good quality, and increasing the quantity of our dairy productions, we may hope to enrich ourselves and our country, by securing the profits which are now enjoyed by our rival neighbours.

The practice of relying principally upon grain crops, we think unwise and unsafe. Continual cropping, without returning the elements of fertility, will soon exhaust the richest soil. Manure must be procured, and it is better to have a home manufactory for its production, than to purchase it elsewhere. Nothing is better adapted for that purpose than live stock, of which a sufficient number should be kept, as they not only produce the necessary fertilizer, but yield a large additional profit.

Although the difficulty of acquiring an im-

proved breed of cattle still exists, the same is not felt with regard to swine. No person now need keep hogs, having no other good qualities than their wonderful powers of enduring starvation, and an obstinate tenacity of life under the most trying circumstances. An evident improvement has taken place, and several persons in this neighborhood are in possession of a good breed, we have greater facilities for further improvement. Friend Horning, too, is now a resident in the neighborhood, having lately "crept out of his shell" at Guelph, and has brought with him a numerous progeny of fine well-behaved Berkshires, contented, amiable sort of pigs, which instead of running grunting about and getting into mischief, do nothing but grow and get fat, upon a moderate supply of nutritious food.

The inconvenience and disadvantages hitherto experienced in the disposal of stock, are happily likely to be removed. In future there will be no necessity for driving cattle to Guelph, a distance of forty or fifty miles more, and there subjecting them to an unfavorable comparison with the superior animals of that locality, and selling, if sold at all, at a ruinous price, as in addition to the recent frequent visits of buyers, we are in possession of the convenience and advantages of two established fairs in Mount Forest, to be held alternately on the third Thursday in May, and the third Thursday in September, when farmers should not neglect to bring their spare stock, so that buyers from a distance may be induced to attend in future, thus establishing and bringing the fairs into public notice, which cannot fail to be a public benefit.

This part of the country bears evidence that nature has here distributed her favors with no niggard hand. The soil is rich, is beautifully watered with springs, rivulets, brooks and larger streams, producing less comfort, and convenience to man and beast, forming a natural drainage, which will undoubtedly be made available as general outlets, and will greatly facilitate a complete system of artificial drainage, on which to a small degree depends the permanent improvement of the land and the prosperity of the agriculturist.

ST. VINCENT.—Amount of subscriptions and public grant, \$129. Paid balance to Treasurer from previous year, \$13; present

102.95; expenses, \$9.05; balance in hand, \$1.00.

SYDENHAM—Forty-eight members; amount of subscriptions, \$48; legislative grant, \$88; total received, \$137. Paid in premiums, \$98.00; expenses, \$26.45; balance in Treasurer's hands, \$12.80.

#### HALDIMAND.

COUNTY SOCIETY—Seventy-one members; amount of subscriptions, \$71; public grant, \$30.96; total receipts, exclusive of deposits from township societies, \$601.96. Paid balance to Treasurer from previous year, \$46.50; and township societies, proportion of public grant, \$318.58; premiums, \$203.50; expenses, \$37.12; balance due Treasurer, \$3.74.

#### *Extracts from Secretary's Report.*

This society, when first formed in 1843, embraced, as now, a territory of forty by five miles, called the County of Haldimand, the county town, Cayuga. About two-thirds of this county is now under cultivation, and not more than one-half, the remaining being wood or wild land. The soil consists principally of clay loam. There are some moraine bottoms along the banks of the Grand River, and shores of Lake Erie. Of the portion under cultivation about two-thirds is for grain crops, the other third grass or low land.

It is with feelings of regret I am obliged to report the depressed state of our county, and of the whole Province, in consequence of the failure of the crops, being for the last years so badly afflicted by insects of various kinds. The first that I believe I may call attention to was the fly or bug in the peas. The first year they appeared they did slight damage. The second year they were very destructive. The farmers becoming alarmed, resorted to all manner of means to destroy the insect—changed their seed from high to low land, or *vice versa*—procured seed from a distance, with not the least success—tried every pains to grow peas without bug, but of no avail; the third year was worse than any previous year. Finding no alternative, we were obliged to abandon raising peas for a few years, and now I am happy to say we have raised crops of peas. The cause of the disappearance of the bug not known.

Discovered by close observation that the fly was the cause of the loss of the blossom of the pea. You will pre-

ceive, when the pea gets nearly half grown, a small speck in it, which grows as the grain does, becomes a maggot, and then turns into the bug or fly. They remain in the grain all winter, and are still in when sowing. I have seen the sower covered with bugs whilst sowing. They remain about the land until the blossoming of the peas, then commence their ravages in the same way as before. The average yield of peas per acre, if good, is about forty bushels. The best sorts for our soils are the golden vine. I have tried the grass pea, they produce nothing.

The next evil I may mention was the disease or rot among the potato. Appearing first among the white sorts in the sandy soil, but slightly the first year. The second year all potatoes in the sand, and part in the clay or flats, were rotten. We again got alarmed, and tried means and experiments by changing seed, soil, mode of culture, but the third year was worse than any former year. It became quite visible that the only alternative was to abandon raising them as much as possible. Doing so had the desired effect, and now we have again good potatoes. The best sorts, or those least subject to rot, are the flesh colored or Merinoes. The Merinoes are very productive, but not so good for table use. The average yield, if good, is about three hundred bushels per acre, although I have known five hundred bushels per acre.

Next came the Hessian fly among the fall wheat, attacking the stalks at first joint above the ground destroying many fields altogether; making their appearance first in sandy soil. The red chaff white most prevalent, white flint and goose the least. Our county, I am happy to say, did not suffer as much as some other counties adjoining, on account of not attacking the stalk until the grain began to get a little head, consequently leaving nourishment enough in the stalk to fill and ripen. The cause of our comparative immunity from this pest is not known, it only appeared about two years. The appearance of the insect in its early stages is that of a small maggot, deposited by the fly getting inside of the blade and stinging the joint. The maggots are white at first, as they grow older they turn brown. They suck the nourishment from the stalk and destroy it.

Then last, but not least, the wheat fly or midge in the fall wheat, appearing in the ear or kernel, doing an unlimited amount of damage. Many, very many means and experi-

ments were resorted to in order to prevent their ravages, but all without the least avail.

As far as my experience goes, the first appearance was by observing a small fly of a longish form flying about among the fields of wheat. The best time for seeing them is about sunrise in the morning or about sunset in the evening. At these times I have seen hundreds of thousands, yes millions, flying among the wheat in the month of June; in fact I have seen them from the month of May until harvest. The time of stinging to do the most harm is when the grain is just beginning to form. You will perceive a small speck in the grain; its first appearance is white; when it is full grown it turns brown. I have observed they did not attack some fields until the blossom had nearly fallen off, at those stages very little or no damage was done; and I observed that the side of the ear next the sun was the worst, and bearded sorts rather worse than others. I also observed at one time, whilst thrashing, on the scaffold, thousands of them lying apparently dead or in a torpid state. During the night a rain fell, which wet the boards; in the morning they were all alive and trying to get to a dry place. Some were dead where the water stood deep. I put some in a box, and in the month of September, until the frost set in severely, some of them were still living.

Can any of you account for those insects or devise any remedy?

For my own part I have been experimenting. I perceive that if the fly attack the grain late in June, or when the grain begins to get hard, very little or no harm is done. Therefore, I prepared my ground and sowed in August, hoping by early sowing to get the grain so far advanced, that when the fly did attack it that no damage would be done, thinking they always began to sting about the middle of June, but all of no use, the early sown suffered as much as the later. I then changed my seed, my soil, mode of culture, and in fact turned every thing up side down to banish the pests, but all was of no use, the damage was just as great under one plan as the other. Again, some authors recommend ploughing down, or burning the stubble. Ploughing would stifle them; burning destroy them. If all and every person would burn their stubble, it might destroy the insect, but if only a few did so all the labor would be lost. Some, again, apply turpentine, which remedy is worse than the disease. I have come to the conclusion that

all experiments in the way of changing seed or soil, to prevent or banish the midge, are no avail. They are scourges sent by Him who is the author and giver of all good. The only thing of any use (as experience has taught us in former crops), is to abandon raising wheat as much as possible for a few years, that they may take their departure.

The average yield of fall wheat for the last three years has not been more than ten bushels per acre, although I am happy to say that the yield in 1859 is better than in 1858.

Spring wheat has been substituted for fall and with most excellent results—very little insect or midge appearing. The proper time of sowing much depends on the season and weather in spring. Robert Wickett, Esq., President of the Branch Agricultural Society in this county, sowed wheat every month of the year but July and December, for an experiment, which resulted as follows:—wheat, sowed first September, and spring wheat sowed first April, were the most productive; also as free from insect or midge than any other. The best and most productive sorts are Fife or golden drop. The Fife is subject to rust. The average yield of spring wheat, when good, has been for two years eighteen bushels per acre; the quantity of seed sown one-and-a-half bushel per acre.

The preparation for spring wheat is as follows: Break up an old meadow in the late fall, sow first April without ploughing, or after a crop of roots manured, plough in the fall. By ploughing in the fall you can sow earlier in the spring, as it takes the ground some time to get dry enough to plough. Ground in no case (or particularly clay) should be ploughed wet.

For sowing grass seed—sow after you have finished harrowing; then go over the ground with a roller, it not only closes the ground to the grass seed but makes a good level for mowing.

I may add here, the Legislature passed an act in 1859 to lend money to municipalities to enable farmers to purchase seed, and to sow their land. The County of Halifax has availed themselves of this opportunity, and purchased seed in accordance with the act, which was of the utmost importance to the only the individual who got the aid, but the whole county, and to the Province generally.

OATS have not been touched by the midge to do harm. The average yield about 20 bushels per acre. The best and most

arts are the common Canadian, Poland, and black, there are some objections to black on account of shedding; they require to be cut little green; they will ripen in the swath, and not shell. They are the heaviest—will weigh 38 lbs. Sow about  $2\frac{1}{2}$  bushels per acre. Plough in the fall after roots, or very early in spring; sow about 10th May.

**BARLEY**—No insect apparently damages this crop. The average yield twenty-five bushels per acre. The best and most productive sort is the two rowed Chevalier. For barley I think the land should be prepared in the following manner: After roots or Indian corn, manured, plough down in fall; plough and cultivate in spring. Sow two bushels per acre. Sow about the first May generally.

**INDIAN CORN**—Suffers from no insect, but is subject to frost. The average yield is about twenty bushels per acre. The best sorts for this county are the eight rowed yellow and white flint. Preparation for corn: break open sward in fall, that is on the sand or bottom land. If you can plough again in spring, plant in rows three and a-half feet apart each way; plant 28th May. You will then be most likely to escape frost in spring and fall; when your corn is fit, cut it, and remove it from the field; if early you may sow with fall wheat, but I would recommend spring crops. In regard to frost, I may remark that we had severe frost in June, which killed all corn that was above ground, and also did much damage to fall wheat. I had a field of twenty acres of new land, and in a few days after frost all the low land turned yellow, and of course did not fill. If the ear was not when it came to maturity.

**ROOTS**—Turnips, carrots, mangel, &c.—There being such a small portion of roots raised in this county I can hardly give an estimate. By enquiry I find the proportion of roots to wheat to be as follows: Wheat 8 or 10 bushels per acre, worth \$1.25; amount per acre \$12 or \$14. Roots from one acre 500 bushels, worth 25c., amount to \$125, or something near it, and with but a trifle more labor than wheat. The work can be done with cultivators and horse hoes, except thinning and weeding. I would here remark, if the farmers would abandon raising fall wheat as much as is now done, and turn their attention to the culture of roots and raising of stock, it would not be more profitable, but would also tend to enrich the midge.

A great deal might be said here in regard

to the culture of roots, &c. As there are so many different opinions in regard to this one branch of agriculture, the majority of farmers will exercise their own judgment. But I would advise all farmers to abandon wheat, and raise roots and stock. I think there is no argument in favor of wheat.

**LABOUR** of a good farming man ten dollars per month and board, or \$18 and board himself. I find, and would recommend every farmer who has 100 acres, to put up a small house in a convenient position, and hire a man by the year to live in it and board himself. Such men are generally more steady, and much less trouble about the house than those who are boarded by the farmer.

**MACHINES AND IMPLEMENTS.**—On old cleared farms the reaper and mower are a great saving of labour; but where the land is new, stumpy or uneven, they are only an expense. The wheel cultivator is very useful for spring work where you plough in the fall or on summer fallow. Subsoiling has been tried but has not proved very satisfactory. Of ploughs for all soils, the Morley, Nags, and Modeland are used. I think if a farmer only has one plough, the Morley is the best. The iron plough of Grey's patent, imported, is used for matches. Of harrows the common double for old land, with thirty-six teeth or points; for new land the three square, or drag, with eleven or thirteen points.

**FRUIT**—So very little is raised in this county that no estimate can be given; but I am convinced that fruit culture would pay well here in comparison with other counties. I may observe the majority of the farmers are now beginning to cultivate fruit trees.

**STOCK**—Horses are, I believe, as good in the county of Haldimand as almost any county in the Province. The best kinds for carriage or roadsters are a cross between the Black Hawk or Morgan, and the common Canadian. We have some good young horses of the celebrated horse Royal George; also from Grand Exhibition, imported by Mr. Powell of Lewiston. They are all better for this county with a small portion of Canadian. A good carriage or roadster is worth now \$150; three years ago the same class of horse was worth \$250. The best for draught are the Clyde and Canadian; a good draught horse is worth \$125. A good brood mare is worth \$150. For a man with one hundred and fifty or two hundred acres of

cleared land, two brood mares are the most profitable stock he can have. Raise foals every second year; by so doing you get showier and better foals; sell them at two years old for \$60, this will afford a good profit. I am sorry to add that the Americans are purchasing and taking away some of our best horses as well as cattle and sheep.

**CATTLE.**—In showing good breeds of cattle there is not much competition, for the same reason as in regard to horses—that parties are buying all the best cattle for export. There is, however, some very good stock; the principal breeds in this county are grades. Very little cheese or butter is made here, as the county is new, and stock not much imported; although a cross between the Durham and Canadian are the best for climate, dairy and butcher, or for working oxen. The price of a good yoke of working oxen is about \$90. I would here remark that there is too much difference between the price of horses and oxen, for instance a horse worth \$120—a yoke of oxen only worth \$90—the one horse is no team, and, when unable to work, is useless. A yoke of oxen if good will do as much work on a farm as a pair of horses, and with less feed, and less expense of rigging, no harness; a yoke and bows are worth \$5, whilst a set of harness is worth \$30. Then again when the oxen have given over work you may beef them, thereby getting full value for them when too old for work, or disabled. Mares are more profitable to farmers than horses for this reason, if disabled in any way, they will do for breeding.

A good milch cow worth \$20 will produce 120lbs. of butter in a season, worth 12½c. per pound, amount \$15. A cow will eat two tons of hay, provided she has nothing else. Milch cows should have turnips or bran mash during winter, by which means the quantity of hay may be reduced to 1¼ ton.

**SHEEP.**—We have some very good sheep here; the Leicester or long wool are the most profitable stock a farmer can have. For instance sheep in the winter season should be kept in a field where there is old grass, and not penned up in a fold at night, but allowed to run in and out of a shelter as they please. By this means 300lbs. of hay or less will keep a sheep, this sheep will shear 7lbs. of wool, at 25 cents per lb.; amount, \$1 75; the carcass is worth \$5 more, saying nothing about the lambs or increase. A farm of 150 acres

can keep 60 sheep, which would yield him annually, clear of all expenses, \$60, besides the increase.

**SWINE.**—Of pigs the number is not great on the whole, although most every farmer keeps a few. I think there is a mistaken idea about farmers wintering over too many pigs. The cheapest and best pork for family use is made from pigs of say nine months old. Parties should be careful and have their sows served by the boar in December, so as to have pigs in March or first April. Take the pig away when three weeks old, feed well and kill in the middle of December. It does not pay to keep pigs for killing for family use over winter; one pig will eat 9 bushels peas or corn worth \$5 62½, besides the expense of fattening when you can buy pork for \$5 per 100lb. Every farmer should have a few pigs to kill through the summer. The best kinds are Grass and Berkshire crossed.

**POULTRY.**—Not much looked after; there are all, with a few exceptions, the common dunghill fowl, as well as geese, ducks, and turkeys.

This report is drawn up by a native born Canadian, of 42 years of age, who was reared in the county, and has witnessed all the changes in all the different departments, especially as well as agricultural, more particularly the agricultural, because he is an agriculturist himself. Farming 400 acres, 250 improved land, the remainder wood or water. I may state for the public information the experience of the last twenty years:

Twenty years ago the County of Hamilton was mostly a wilderness; the Great River about that time was made navigable, there were dams erected, mills built, flouring, sawing, and grinding plaster. Previous to that date the nearest flour mill was at Ancaster, a distance of 30 miles from now county town. We could only transport on account of bad roads, &c.; now we have many mills of mostly all descriptions. The saw mills are a great benefit to the farmers here in the winter season. His men are employed hauling logs to the mills, most of us have some timber of our own, which is a great help to us, more particularly when our crops fail. Our lands have increased in value for the last five or six years. Land five years ago was worth in most parts of the county sixty dollars per acre, now more than thirty, a falling off of one half

years ago we could get *two dollars* per bushel for our wheat and other grain in production; for a horse \$200, yoke of oxen \$250; labour was \$15 per month and board. Times are changed, I think we may look forward now for better. Our country is becoming cleared up. We have good markets at our doors, have good schools and churches, in fact everything we need except roads.

**AGRICULTURAL SOCIETIES.**—This Society was first formed in 1843, when it received from the Governor General a donation of five pounds. It has since maintained its existence, and has received the annual aid under various parliamentary enactments in the same manner as other county societies.

I believe that if there were no branch societies, but one grand County Society, all subscriptions and Government grants to be received for the one great society, it would be the first in the Province. Elect proper officers—men who will work, put their shoulders to the wheel, and move forward, persevere, unite, and we shall prosper. Where there is union there is strength.

#### TOWNSHIP SOCIETIES.

**EASTERN BRANCH.**—This Society, organized in January, 1860, embraced in its limits the townships of Moulton, Sherbrooke, Dunn, and Canboro. It consisted of one hundred members, subscribing \$1 each.

**RAINHAM.**—Forty eight members; subscription, \$48; balance from previous year, \$27; share of public grant, \$67 96; total received, \$155 23. Paid premiums, \$2 75; expenses, \$29 88; balance on hand, \$2 60.

**SENECA, ONEIDA, AND CAYUGA.**—Fifty members; amount of subscription, \$53; balance from 1858, \$1 33; grant, \$84 95; wheat sold, \$24 12; total received, \$340. Paid premiums, \$125 75; expenses, \$41 68; balance due treasurer, \$33. The directors of this society forward the extended and interesting general reports on the agriculture of the townships, being to a great extent a repetition of the report from the county, they are not here stated.

**ALFOLE.**—One hundred and fourteen members; subscription, \$117; balance from previous year, \$56 25; grant, \$165 66; total received, \$338 91. Paid premiums, \$; expenses, \$36; balance in treasurer's hands, \$47 91.

## Miscellaneous.

### God's Plan in Geography.

The physical geographer now claims that the particular arrangement of seas, continents, mountains, and rivers, which earth has received, is the very best that could be given for the purpose to which the earth is destined. As the divine wisdom is manifested in the order and adaptation of the parts of the human body, of animals and of plants, so there is an object in the particular shape the continents have been made to assume. Everything works in harmony with a divine plan, which we claim to be beginning to comprehend.

Change the position of Asia and Europe, and you would have ruin and death. Ireland, now always green, would have the climate of Labrador. Compare the British Isles, Norway and Sweden, with the corresponding latitudes upon our own coasts, and we see the dreadful consequences. Take away the Andes; which arrest the rain-clouds, and South America, that most wonderfully watered continent, would be a desert. Take away the Rocky Mountains, or change their direction to east or west, and we have our own fertile country ruined. Elevate our southern coast so as to change the direction of the Mississippi, and what mischief would ensue!

There is literally a face to nature, as there is a face to man. As we have our circulation of the blood, so there is the circulation of the earth's great heart of fire, the circulation of the waters and the ventilation of the air. We have yet to consider these varied shades of nature in their relations to each other, and to man and animal life. But we are not to stop here. The physical geographer claims that the influences bearing upon the intellect of man can be explained by the peculiar arrangement of the earth's surface. We know that civilization has marched from east to west, from Asia to Europe, and even across the Atlantic to the new world—growing and expanding in its course. We can see what has been developed in Asia and Europe, and many predict something for America—*Prof. Doremus*.

## Editorial Notices &c.

**OUR PRESENT VOLUME.**—We have much pleasure in being able to announce that the subscriptions for the present volume of the *Agriculturist* are coming in in the most satisfactory manner. We fully anticipate obtaining a much larger circulation this year than ever heretofore.

**BACK NUMBERS.**—We have abundance of back numbers on hand to enable us to supply orders



from the beginning of the year, having commenced with a larger edition than we have ever before printed.

OUR PREMIUMS.—We beg to remind all who are kind enough to act as Agents for the *Agriculturist* of the advantage of making their orders as large as possible before the first of April. Those whose lists are yet small need not be discouraged, and those whose lists are large, should recollect that other agents are pretty energetic as well as themselves. Last April 226 copies obtained the highest prize, and 27 copies the lowest.

**The Agriculturist for 1861.**

The *Agriculturist* is published semi-monthly, each number consisting of 32 pages, and forming a volume of 768 pages.

The *Agriculturist* is exclusively devoted to Agriculture, Horticulture, and similar subjects. It is the cheapest paper of the kind in North America, and specially adapted to the circumstances of the soil and climate of Canada.

The *Agriculturist* is Post Free.

The terms of subscription are: Half a dollar per annum for single copies; Eleven copies for Five Dollars; Twenty-two copies for Ten Dollars; Thirty-three copies for Fifteen Dollars, &c. Payment always in advance.

**CASH PREMIUMS.**

As a further reduction in price on the largest orders, the following money premiums will be paid on copies ordered and paid for prior to or on 1st April next, viz:—

To the officer of any Agricultural Society, member of a club, or other person who shall send in the largest list of subscribers, accompanied with the cash, on or before the 1st April next, a money prize will be paid of..	\$20
To the person sending the next largest list, a prize of.....	19
The next largest.....	18
The next largest.....	17
The next largest.....	16
The next largest.....	15
The next largest.....	14
The next largest.....	13
The next largest.....	12
The next largest.....	11
The next largest.....	10
The next largest.....	9
The next largest.....	8
The next largest.....	7
The next largest.....	6
The next largest.....	5
The next largest.....	4
The next largest.....	3
The next largest.....	2
The next largest.....	1

BOARD OF AGRICULTURE  
Toronto, January 1861.

**Contents of this Number.**

Weeds.....

Land Drainage.....

On Breeding.....

Root Culture.....

Physical Geology of the Western Districts of Canada.....

Barn Yard Manure.....

Botany of the Red River Settlement.....

West Highland Ox.....

Importance of Agriculture.....

Agriculture in English Literature.....

The New Settlements in Upper Canada.....

Use the Fanning Mill.....

Light for Animals.....

Stock to Australia.....

**HORTICULTURAL :**

Orchard Culture in Canada.....

Meeting of Fruit Growers' Association.....

Planting and taking care of fruit trees.....

**THE DAIRY :**

On Preserving Milk.....

Selection and Management of Dairy Stock.....

Goshen Cheese.....

Devonshire Cream, Glass Milk Pans.....

**VETERINARY :**

How to detect blindness in Horses.....

Breeding of Race Horses.....

Saving Horses from burning stables.....

Vitality in Horses.....

**TRANSACTIONS :**

Reports of Societies, County of Grey.....

“ “ “ Haldimand.....

MISCELLANEOUS.....

EDITORIAL NOTICES.....

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