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THE  
**CANADIAN AGRICULTURIST**  
AND  
**Transactions**  
OF THE  
**BOARD OF AGRICULTURE OF UPPER CANADA.**

VOL. IV.

TORONTO, MAY, 1852.

NO. 5.

AGRICULTURE—ITS ADVANTAGES AS A  
PURSUIT.

BY ABSALOM GREELEY, DEMORESTVILLE, COUNTY  
OF PRINCE EDWARD.

[To this Essay, written by a young farmer, has been  
awarded a Diploma by the Board of Agriculture.]

Agriculture not only gives riches to a nation, but the  
only riches she can call her own.—DR. JOHNSON.

Agriculture is coeval with the creation; it is  
co-existent with Time. Independently of its  
great and indispensable benefits to the human  
family, it is the great beautifier and renovator  
of the earth. It is the immovable basis of home,  
and all endearing associations. Without it man  
would be a wandering vagrant, without a "local  
habitation or a name." The social compact, as  
it now exists, in all its nice discriminations and  
distinctions, would never have existed. Com-  
merce would be unknown, and manufactures  
would be undiscovered. The earth would be  
an unbroken forest, and all those bright and hap-  
py scenes which the labor of man has created,  
would never have been imagined.

Agriculture is the true source of patriotism.  
It is what makes country and home valuable.  
The owner of the soil will defend his home, for  
there are enjoyed the pleasures and the sweets  
of life. It is there that life's happiest scenes are  
passed, and there the aged man hopes to repose  
in peace. Agriculture then, so prolific of re-  
sults of the highest consequence to the human  
family, must be advantageous as a pursuit.

First,—It is a peaceful and innocent pursuit.  
While Commerce is involved in the meshes of a  
net-work of speculation, Agriculture is compara-  
tively free from all such contaminating influences.  
In its pursuit honest labor meets its reward, and  
a consciousness of having earned the comforts of  
life, adds zest to the enjoyment. We find evi-  
dences of this truth on every hand. In every  
land the rural population, wherever their indus-  
try is not torn from them by the gripe of avarice

and oppression, are peaceful and contented; and  
it is alone, amid the mazes, and the crimes, and  
the restlessness, and excitements of cities and  
capitols, where Revolutions take place and trea-  
son is planned. By this I do not mean that the  
tillers of the soil take no interest in their con-  
dition politically, and that they never take the  
field in defence of those rights with which Heav-  
en has invested them, and those privileges guar-  
anteed by the social compact. But it is only  
when mis-rule and oppression rouse them from  
their peaceful position, that they are impelled by  
a common feeling of patriotism against a com-  
mon enemy. Thus Cincinnatus was taken from  
his plough to rule the destinies of Rome, and  
Washington exchanged the peaceful shades of  
Mount Vernon for the battle-field. Fabricius,  
the Roman Senator, who was proof against the  
gold of the King of Epirus, received his support  
from a "little field." Some of the great states-  
men and generals of antiquity found a relief from  
the cares and anxieties of State in the composi-  
tion of works on Agriculture. Virgil, in his  
Georgics, makes Agriculture a theme for his in-  
spired muse, and Solomon, the wisest man, wrote  
treatises on every plant from the "Cedar to the  
Hyssop." In short, earth's wisest and bravest  
have found a delightful retreat, and a certain  
repose amid the peaceful scenes and happy fields  
of the farmer.

The merchant who is fortunate enough to re-  
alize sufficient means usually builds himself a home  
in the country, and amid a rural population, en-  
joys for a season each year that repose which  
his worn and harrassed mind requires, and which  
is not to be obtained at any price in the busy  
Mart on the Exchange, or amid the tinsel of  
fashionable life. In doing this he seeks those  
very advantages which are peculiar to a far-  
mer's life,—health and peace of mind,—without  
which the greatest riches cannot impart happi-  
ness.

The Lawyer may find amusement and employ-  
ment for his mind in disentangling the mazes

and labyrinths woven by litigation, and in the excitement of forensic efforts and doubtful success, may feel a thrill of pleasure, or enjoy a gleam of satisfaction. But it cannot be denied that his most eloquent appeals are bought with a price,—that his talents and legal lore are frequently prostituted from necessity to the defence of men to whom he would not speak should he meet them in any other place than the dungeon or the prisoner's dock, and from whose presence he would fly as from a pestilence. Stripping the profession of the law of the empty honors conferred by Statute, and the privileges and immunities incident thereto, and the man would sink beneath the drudgery of form, his mind would sicken at the crimes of every dye that are continually arrayed before him. All the better feelings of his nature would revolt at the prospect of defending from justice the midnight assassin, the incendiary and the seducer, the wretch who would break down every barrier of virtue, and pluck up every bright flower that blooms in the pure and spotless mind of youth and innocence: yes, the man who would desecrate the altar or betray his country, must be defended by those who have consumed the "midnight oil" in patient and untiring study!

Too many of our youth are rushing into the profession of the Law. The peaceful and innocent pursuits of Agriculture never caused virtue to shed a tear, or robbed Justice of her victim. Cunning and artifice are never employed by the Agriculturist in the pursuit of his avocation. He breathes the pure air of Heaven, uncontaminated by the damps of dungeons. The music of the birds,—the verdure of the fields, and the thousand sights and sounds that animate and render vocal the landscape, cheer him on his way, and he sows the seed in hope, and the blessing of Providence gives the increase.

By common consent the profession of Arms is honorable. Ages have given it their sanction. From the earliest dawn of History, Conquerors have risen up from time to time, upon whose track desolation and want; grief and misery have followed. They have gathered what the world calls *laurels* upon the ensanguined field. They have astonished the world by the greatness of their deeds, if we judge them by their violence and injustice. Earth's fairest scenes have been desolated; the brightest prospects of her children blasted by cruel, vindictive *War*; and in the sack of Cities and the desolation of Provinces, the historian records the work, not of men, but of demons. But the "pomp and circumstance," the tinsel ornament and the gorgeous pageantry of an army are peculiarly attractive to unphilosophic eyes. I can imagine the profession of arms honorable in a Leonidas struggling with the proud Persian upon the

threshold of his country; a Kosicuseko or a Kossuth! Though defeat was the bitter portion of them all, yet theirs were the honor and the glory.

The Profession of *Agriculture* is unsullied by violence or crime. The tears of the widow, and the lamentation of the orphan appeal not to Heaven against it. Instead of desolating Provinces, it makes the wilderness beautiful—instead of destroying Cities, it gives food to their vast population, and *originates* Commerce by providing a surplus for export. More than all this, the maxims of War are declining, and soon the din of battle and the clash of arms will be heard no more, while Agriculture is beginning to be aided and patronized by all civilized nations.

Agriculture is truly innocent and peaceful; the day is spent in healthful labor, and when the curtain of night overshadows the earth, the *countryside* is silent and at rest. Not so the city—the abodes of prostitution and of crime exhibit evidences that deeds are being committed which will not bear the light of day—the thief is at his work, and the incendiary expects, in the conflagration which he causes, to reap his reward in plundering the goods of his victims!

The life of the farmer, then, is a life of honesty, of innocence, of peace, and consequently one of *happiness*; the great end and aim of all our efforts and all our desires.

Secondly,—It is an independent pursuit. There is no condition of life so desirable as independence, and a pursuit that places a man nearest this grand desideratum is certainly most advantageous. It is, I believe, impossible in this present state, or in that of any other which is revealed to us, to be entirely independent. The poet very truly expresses this sentiment when he says—

"God never made an independent man,  
'Twould mar the concord of his general plan."

But there are some avocations that alleviate more of the wants and "ills to which man is heir" than others, and I will endeavor to show that the pursuit of Agriculture stands pre-eminently above all others in this respect.

The labor of the world is directed towards the accomplishment of two objects; providing for the necessaries of life, and the accumulation of riches. The first is immediately necessary; the other is laudable only as a provision against old age or misfortune. The agriculturist provides immediately by his labor for the necessaries of life; and an interest in the soil, confirmed as it is in this country by the patent of the Government, provides, with ordinary foresight on the part of the owner, against the latter contingency. So that the farmer has within his grasp that

which in most other pursuits, is only a doubtful calculation.

Taking the accumulation of riches into account, if the farmer does not accumulate as rapidly as an occasional chance speculation in Commerce, it is, nevertheless, *more certain*. Commerce is liable to be overdone, so that bankruptcy is the inevitable consequence. Manufactures may be carried to too great an extent, so that capital invested in them will remain idle or unproductive,—operatives thrown out of employment, and want and suffering inevitably follow. But while the earth is peopled, food must be provided. This is exclusively the province of the farmer; and while man is constituted as he now is, the Agriculturist will have an unfailing market for all he can produce. Nor can manufactures be carried on without the raw material, which for most articles must be provided by the farmer. 'Tis true an abundant harvest may reduce, to some extent the prices of produce, but instead of this being regarded as a calamity, it should be looked upon with gratitude, as a blessing of Providence. The Agriculturist, then, is certain to obtain a competency.

Another consideration of vast importance is that a competency, when once obtained, is more secure. In Cities, men who invest their money in houses, frequently suffer heavy losses by fires, and certain loss by inevitable decay. Commerce is at the mercy of the winds and waves, and an unfavorable turn in the markets, often strips men engaged in mercantile pursuits, of all they possess. Risks of this kind are not incurred, to any great extent by the Agriculturist. Farmers can get their property insured against fire at a rate far below what is paid in cities; and if a farmer is utterly ruined, it is usually done by "*endorsing for a friend*," or frequenting the bar-room. In a word, the farmer is the only man in the world who can combine, within himself, those pre-requisites to happiness which "lie in three words," and which are so often quoted, namely: "*Health, Peace, and Competence*."

Third,—Agriculture is a pursuit favorable to the improvement of the mind. The alleged ignorance of farmers is proverbial. I will meet this objection at the beginning. The Agriculturist may be ignorant of the intricacies of Statute law, or the conflicted creeds and hair-splitting disputes of Theologians. The technicalities of science, and the almost imperceptible inductions of speculative philosophy, may be to him a sealed book. But he is, nevertheless, well acquainted with the *principles of justice*, and in the Courts of Law we invariably find the farmers of the Counties composing the juries, who are in the end to decide on the facts of causes and the conflicting testimony of witnesses. The volumes of nature and revealed religion are spread out

before him. He worships with a simple and unaffected piety. The growth and formation of plants are among his familiar subjects of observation and study: he is, in fact, a botanist without understanding, it is true, the technicalities of Linnæus. The nature and the peculiar habits of the various animals that compose his stock are well understood, and all the operations of a well regulated farm, exact in themselves, beautiful in their combined operation, and beneficial in their tendency, require to be matured and directed by a single mind.

The mere book-worm may sneer at the farmer's poverty of language. The Lawyer may sometimes rejoice that his client is ignorant of the technicalities of Law. But let no one suppose that the genuine Agriculturist is the ignorant, imbecile *thing* he is so often represented. He can boast of his *practical* intelligence; an intelligence that empowers labor to create a garden in the wilderness; that founds empires, where only the wild beasts formerly roamed. The pioneers of every land, before whose efforts the forests melt away; beneath whose hands the earth is clothed, as if by magic, with a robe of loveliness, are all farmers. They bring forth from the bosom of the earth, the bread that supports the teeming millions of this world, and by their ceaseless activity and unyielding perseverance create that capital which is the sure foundation of a nation's greatness, and "*the only riches she can call her own*."

I do not wish to be misunderstood; far be it from me to insinuate that Agriculturists do not require their minds to be enlarged by the various branches of science, and particularly those that more immediately relate to farming. I believe that with a proper system of common schools to lay the foundation, there is no occupation so conducive to intellectual and moral improvement as Agriculture. The fields of the farmer constitute a grand Laboratory, in which nature performs her work, and where the intelligent mind can find sources of improving thought, and volumes of the most valuable instruction. And in the calm retirement of his quiet home, the farmer, whose mind is properly trained, can scan the movements of conflicting parties, the turmoil and excitement and confusion of politics, and in the hour of danger, as well as of peace, becomes the sheet anchor of his country.

Agriculture was devised by the Creator as the means of support for his creatures, and in its time-honored pursuit, the farmer, in the beautiful language of one of England's greatest bards, will find—

"Tongues in trees,  
Books in the running brooks,  
Sermons in stones,  
And good in every thing."

## MEETING OF THE BOARD OF AGRICULTURE.

The Board met, pursuant to adjournment, on the 20th, 21st, and 22nd of April, in one of the Committee Rooms of the Parliament Buildings in this City. Members present:—E. W. Thomson, Esq., Chairman; Hon. Adam Fergusson; David Christie, Esq., M. P. P.; R. L. Denison, Esq., John Harland, Esq.; and the Secretary. T. C. Street, Esq., M. P. P., President of the Agricultural Association of Upper Canada, favored the Board with his attendance, to assist in revising the Premium List, and making arrangements for the next Provincial Exhibition to be held in Toronto, in September next. Wm. McDougall, Esq., was also present, by request, at one of the sittings that the Board might have the advantage of his views and experience with reference to the working of the new Agricultural Statute, and certain objections that have been raised thereto.

The following is a short abstract of the proceedings.

The revision of the Premium List occupied a large portion of the time; the Secretary submitted a number of communications, containing suggestions and recommendations on the subject. Nothing was expunged from former lists, worth mentioning here, but several additions were made, and the aggregate amount of premiums, for 1852, will greatly exceed any previous year. As the list will be published in the next number of the *Agriculturist*, the mention of particulars here is unnecessary.

The Secretary had received but few returns of Judges for the next Exhibition from County Societies, a circumstance the Board much regretted, as involving considerations of the greatest importance to the efficient and satisfactory working of the Show. It was agreed, however, that the Secretary, with the other members of the Board should use their best exertions in timely preparing as full a list of competent judges as may be practicable: and in order that the judges may assemble in good time, and become acquainted with each other, previous to entering on their duties, it was resolved that an early Breakfast be prepared for them on the grounds, on the first day of the Show. It was also determined that the previous regulation, imposing an entry charge of 7½d on each article above three, should be abolished; such regulation having been found to cause much trouble and inconvenience in practice, without making any addition worth considering to the funds. It having been found from an experience of four years that a ploughing match in connection with the Annual Exhibition of the Provincial Association has proved comparatively a failure; the competitors being in most

cases from the immediate vicinity in which the Show is held, and the attention of both officers and visitors is so fully engrossed with other matters, it was deemed expedient to discontinue the usual ploughing match. The Board is of opinion, however, that the encouragement of County ploughing matches, and devoting an entire day thereto, is an object worthy of consideration and support.

The Secretary submitted communications from the Agricultural Societies of Perth and Northumberland, objecting to several provisions of the present Agricultural Statute; one or two other Societies, it had been incidentally noticed in the public prints, had also raised objections, but they had not communicated them to the Board. The Secretary also mentioned some suggestions which he had received in the course of correspondence with individuals relating to this subject, which were entitled to consideration. After devoting much time and thought to the matter, it was deemed expedient to defer the further consideration of the question to another meeting; in the mean time the Minister of Agriculture should be consulted, and the Board informed of the views and intended plans of this new department of the Government. It was also suggested that the Statute under which this Board is organized should be so far amended as to include the Minister of Agriculture and the President of the Provincial Association as *ex-officio* members thereof. The Board was of opinion that the 20th clause of the Act, interpreting the word County as including United Counties, should be repealed, so as to make each County separate and independent, and that the present amount of £17 10s, to be raised by a Township Society, before it can be legally organized, should be reduced to £10. These, and, perhaps, in few minor alterations, appeared desirable should be made in the next Session of Parliament, but it was thought at present premature to interfere with the principle and other provisions of the Act, till it had been tested by a longer experience. The Board will be always thankful to receive communications on the subject, since there can be but one object to secure, viz: the obtaining of the best legislative enactment, upon the whole, for promoting the Agricultural improvement of the country.

Several reports from County and Township Societies were received, with statements of income and expenditure, list of officers, &c., abstracts of which were ordered to be made and published in the Transactions. Only two reports, however, had been received that came within the prescribed conditions, accompanying the Prizes offered last year for Agricultural reports of Counties. The first prize of £20 was awarded to the Report of the County of Wellington; the second prize of £15 was awarded to the Report of the County of Hastings. These reports were ordered to be published in the Transactions, prefixed to the *Agriculturist*. It was also resolved that Reports in this class should be received up to the 1st of May; such reports, however, can compete only for the third and fourth prizes. For the future competition for County Reports is to be thrown open to the public generally; the conditions will

be stated in full in the forthcoming premium list.

The Chairman, Treasurer, and Secretary were authorized to complete the arrangements with the University Authorities respecting the grounds for the Experimental Farm, and commence the necessary preparations without delay. It was thought that the Winter season would be the most suitable to young men in the country, for attending the lectures of the Professor of Agriculture, in the University, and that publicity should be given to the arrangement as soon as completed.

The Board have received permission from Government to occupy a room in the Parliament Buildings for an office.

Professor Croft, of the University of Toronto, was requested to act as consulting Chemist to the Board.

Donations of Books for the Library had been received from F. Widder, Esq., Hon. Adam Fergusson, and Wm. McDougall, Esq., for which a vote of thanks to these gentlemen was passed.

J. B. Marks, Esq., favored the Board with a long communication containing several useful suggestions for which a vote of thanks was passed. Mr. Marks was prevented attending in consequence of navigation not being thoroughly open, and a letter from Mr. Sheriff Ruttan was also read, who was detained on Assize business at home. The Secretary received a communication from Mr. Sheriff Treadwell too late to bring before the Board.

The Treasurer was instructed to procure the accounts of the Committee at Brockville relative to the expenditure in erecting fences, buildings, &c., in connection with the last Exhibition, and the payment of the balance yet due, and that the Chairman, Secretary, and Captain Shaw be a committee to audit the Treasurer's accounts, before the next meeting of the Board. It was left to the Chairman to determine the time of the next meeting of Board, the proceedings of which then terminated.

GEO. BUCKLAND,  
Secretary.

Toronto, April 27, 1852.

**A DISCOVERY.**—A chemist in New Orleans has been making experiments with Indian Hemp, (*Canabis Indica*) in order to test its availability for medicinal purposes. He found that six grains, a large dose, produced great weight about the head, followed by irresistible bursts of laughter, during which, however, he was perfectly conscious of all that he was doing, or felt or thought. He says:—"I was astonished by the crowd of brilliant and novel ideas and fancies that rushed through my brain, returning over and over again. Imagination and perception were developed to their greatest extent. All the principal incidents of my life passed before me like a flash. This condition of mind lasted about two hours. Dreams and reveries of the most pleasing nature followed this extraordinary tension of the intellectual faculties. Then came a deep, calm sleep, which terminated this singular fit of mental hallucination." He thinks it will become extensively used in medicine.

## The Agriculturist.

TORONTO, MAY, 1852.

FLAX; ITS CULTIVATION AND MANAGEMENT.  
NO. II.

There can be but little doubt that the cultivation of Flax, on a *moderate scale*, might be made profitable in Canada; provided a certain market could be depended on for the raw material. A slovenly cultivation, however, could never pay; and it is most desirable that whatever attempts may be made in this, to us, new department of husbandry, should be as thorough and perfect as circumstances will permit. In the introduction of any new crop into our rotation, except upon a mere limited, experimental scale, more than ordinary caution should be observed. A speculative demand may exist for a particular article for a short time, and high prices may consequently be obtained; but a reverse is sure to follow in the ordinary course of things, involving often the ruin of thousands. A practical Farmer, in a recent number of the *Mark Lane Express*, has the following sensible remarks:

"It is very speculative to relinquish a common corn crop which is almost certain in its production, for one of which we know comparatively nothing, be its prospective advantage never so great. Times of great and long depression are sure to call forth speculations of this character: the result has been disastrous to thousands. It pains us to know that the cultivators of chicory, canary seed, and turnipseed and like small seeds, have suffered most severely during this season, and that the cultivators of potatoes and flax have not as a class been remunerated. The price of the dried chicory-root has fallen from £27 10s. to £6 10s. per ton; canary-seed from about £5 10s. to £1 15s. per qr.; and turnip and other seeds, in all their varieties, in equal proportion. This is owing to speculative growth within a very short period. Potatoes and flax are of more general utility, and in consequent demand; but we fear the continued extension of their culture may ultimately prove very unprofitable. We entertain a high opinion of flax culture, and we believe that the efforts now making to bring into full development all its powers will end in its becoming one of the most general and most profitable of our cultivated crops."

The uncertainty of the Flax crop on this continent, arises more from the *slovenly manner* in which it is commonly treated, than from anything unfavourable either in soil or climate; although the extreme dryness of the weather, during the spring and summer months, which more or less characterises the American climate as a whole, must be regarded, to a certain extent, as unfavourable to the successful culture of

this useful plant. In Belgium, however, the climate of which is neither so moist nor equable as that of the British Islands, the production of Flax, as regards both quality and quantity, has long since reached a point wholly unapproached by any other nation;—an advance mainly attributable to the adoption of a *sound and thorough system of manuring and cultivation.*

It has been objected to the growth of Flax that it rapidly exhausts the soil; and hence in many farm leases in England, its cultivation is fenced round by numerous and perplexing restrictions, and is sometimes prohibited altogether. Of its exhausting tendency when frequently grown, without regard to rotation, and where the seed and fibre are wholly taken away, and nothing possessing the same ingredients returned to the soil, there remains not the shadow of a doubt. But there is nothing peculiar to Flax in this respect; all other seed producing plants would, under the same treatment and conditions, bring about precisely the same result. It is well understood by our best cultivators, and the most eminent chemists who have given their attention to the subject, that the flax plant has no peculiar power of exhausting the land; but on the contrary, when adopted into a judicious rotation, and properly manured and cultivated, it becomes an *ameliorating* crop. If every farmer, of any extent, in Canada, had an acre or two of this crop under the mode of management herein implied, the finer portions of the fibre only sold, and the remainder used for litter to make manure, and the seed fed to cattle;—by these simple means the productive powers of the soil of the whole Province would be materially increased, as would also the money value of all descriptions of live stock, whether for breeding or fattening purposes.

The following extract from a statement of an Ohio farmer, will afford our readers an idea of the mode of raising flax, in that state of the union:

"If on sod ground, plow *very* deep in the spring; as early as frost will allow; harrow well till it is mellow, then sow about three pecks of seed per acre, and drag it lightly. We think three pecks little enough on sod ground, but less might do on corn stubble or fallow. It is less labor, covers the ground from the scorching rays of the sun, and leaves the soil in a better preparation for wheat than the old plan of summer-fallowing. We get on an average 10 bu. seed and 400 lbs. of dressed flax per acre. The seed sells here for \$1.25 per bu., and the flax\* for 7 cts. per lb. So that a crop yields us \$40.50 per acre. Some seasons, if the soil is well prepared, we get 16 bu. per acre, and 600 to 700 lbs. of dressed flax. I do not think it impoverishes the land so much as a barley or an oat crop."

We copy the following remarks, on the cultivation of Flax, from the writer in the *Mark Lane Express*, before mentioned:—

We would first remind our readers that nearly all

the raw material used in our linen manufacture is the produce of foreign countries, as is also the linseed crushed for its oil and oilcake. The Government returns show that about £8,000,000 is annually paid to foreigners for flax, linseed, and oilcake, almost the whole of which is brought into home consumption; the exportation of linen and linen yarn being about two-thirds of the quantity produced, all the oilcake and oil being wholly consumed at home. Now, as we have a climate congenial to the growth of the flax crop, and a soil well adapted to its culture, we think the employment of a large portion of our agricultural population in the cultivation and preparation of this crop for the manufacturer and the oil crusher, can be regarded in no other light than as a national blessing. The amount of expense incurred in manual labour alone, upon an acre of flax of average growth, taking it through all its stages, i. e. sowing, weeding, pulling, watering, and grassing, lifting, and carting, and scutching will not fall far short of £6; the rent, rates, and seed to about £4 more. This appears a heavy outlay, but if such a large cost in labour can be abundantly repaid in the crop, no one will demur to it; besides, we have greater facilities for its culture than formerly, both in the diminution in the price of labour and the scientific appliances brought to bear upon it. In the latter, we have full confidence; we augur much from Mr. Dickson's machine, and other inventions and discoveries both in the preparation and manufacture of this valuable crop.

The produce of the flax crop in money value, if we are to credit the accounts given us by many respectable cultivators (and we see no reason to doubt their correctness), is very great. Many instances are given, showing a nett profit varying from £12 to £30 per acre. We think the average yield of an acre of flax will be about 7 cwt., and the produce of seed about 20 bushels. This we think a rather low average. The price of good useful flax per ton is about 60s., and the seed about 6s. per bushel. At these prices the flax will be worth £21 per acre, and the seed £6; total, £27; thus leaving a nett profit of £17 per acre, taking the costs at £10 per acre, as stated. Now, it must be borne in mind that to produce this profit the cultivator must be provided with every convenience; otherwise he must sell his flax straw to the "letter," or waterer and scutcher; and herein lies the difficulty. We trust that in every district parties will be found to undertake these departments upon reasonable and equitable terms, and thus encourage the culture of this most valuable and much-required crop. Scutching mills are required in every district suited to flax culture, and will form a profitable business.

GRAMMAR SCHOOL L'ORIGNAL.—We observe with much pleasure, that efforts are being made for establishment, a Grammar School for the United Counties of Prescott and Russell, for which Charles P. Treadwell, Esq., has offered a site, with a handsome subscription of £105 towards the erection. It is in contemplation to have a small model or illustrative farm attached, so as to include the science and practice of Agriculture, in the general routine of study. We trust the effort will be successful.

DEATH OF THE REV. J. R. SMYTHIES.—Our recent English exchanges contain the melancholy intelligence of the decease of this distinguished breeder of *Hereford* Cattle. Mr. Smythies expired on the 24th of March, in the 74th year of his age, after having spent an active life both as a clergyman and an advancing agriculturalist.

PROGRESS OF WESTERN CANADA.

We insert the following official document for the information of several parties on both sides of the Atlantic, who have sent us inquiries respecting the soil, climate, and social condition of the Western portion of the Canadian peninsula. It clearly indicates a healthy and most satisfactory rate of progress. When the great Western Railway is completed, and branches in connexion therewith made in different directions, the immense resources of this extensive, healthy, and most fertile tract of country, will be fully called forth, and it will then stand second to none on this continent as a field for enterprising and profitable industry. Notwithstanding the present rapid settlement of this Western portion of Canada, there will remain ample room for all comers for many years; and all persons coming from the Old Country with means, whether great or small, would do well to give this section of country a personal investigation before finally determining their locale:—

REPORT

*By the Clerk of the Peace of the United Counties of Huron, Perth and Bruce, upon the state of Crime within the said United Counties, during the year 1850.*

To the Honourable Board of Registration and Statistics, Toronto:

There are few circumstances in the history of an infantile settlement, more delightful to the statist or philanthropist, than the contemplation of the diminution of crime, and advancement of the prosperity of a people, or that tell more forcibly in favour of the good government of mankind, than when they are accompanied by active industry, full employment, and the real prosperity of a large, miscellaneous, and contented community.

Moreover, the facts which I am about to adduce in support of the above sentiments are big with inquiry and contemplation, both to the philosopher and the politician. Indeed it cannot be disputed in the present day, that the melioration of the condition of the people in all civilized countries under free and liberal governments, can only prosper and go hand in hand with just, equitable and humane legislation.

To the individual intelligence of the magistracy—now ramified over the length and breadth of the two senior counties—and by their benevolent and upright discharge of the administration of justice in accordance with the law of the land—to the absence also of political and sectarian animosity, but principally to the industry and morality of the people, are we mainly indebted for the remarkable diminution of crime which adorns the period in these united counties since the census in 1848.

But as facts are better than arguments, I shall

at once go to the proof, in as far as the documents in my possession, and the returns of convictions by the Magistracy, and the records of the Courts of Quarter Sessions are concerned; leaving the trifling matters connected with the Courts of Assize—over whose statistics I have no control—to speak for themselves in another place.

The population of the Huron District in 1841, was - - - - - 5,600  
 In 1847, six years thereafter, 16,641...Inc. 11,043  
 In 1848, one year thereafter, 20,450...Inc. 3,807  
 In 1850, two years thereafter, 26,933...Inc. 6,483

The last quotation is nearly independent of the new and fast settling county of Bruce, which, owing to the infancy of its municipal institutions, only returned 360 persons for the townships of Huron and Kincardine, but which may now confidently be assumed to contain from 3000 to 4000 inhabitants—say 3,067—or a total population of the three united counties of - - - 30,000

Being an increase for 1849 and 1850 of 9,550  
 Or a total increase, since 1841, of - 24,400

An increase almost incredible, as, upon reference to Smith's work on Canada, it will be found that the Huron District has made more rapid progress since its first settlement in 1827, than Lower Canada did in one hundred and four years, its population then being (in 1721) 24,511.

It should be borne in mind that the population of the United Counties, by the census returns, is composed of natives of England, Scotland and Ireland, French Canadians, British Canadians, Germans, Dutch, United States, and other countries, living in peaceful neighbourhood, all rejoicing under twenty different sub-divisions of the Christian faith, but by hypothesis not likely to remain in good fellowship. Daily experience, however, proves the contrary.

As regards the statistics of crime—and really the piccadilloes committed in 1850 do not deserve so high a title—I shall first state those returned in 1848.

Convictions made by Justices in 1848,	174
Tried at Quarter Sessions, - - -	13
Deduct acquitted, - - -	7
	6

Total convicted in 1848, - - -	180
Convictions by Justices in 1850 - - -	120
Tried at Quarter Sessions - - -	1
Deduct acquitted, - - -	1
	120.

Decrease of convictions for 1850, -	60
Amount of fines, penalties or damages imposed by Justices in 1848, - - -	£112 19 8.
Amount imposed in 1850, £85 19 1	
Deduct amount remitted, 27 18 2	
	58 0 11

Decrease of fines for 1850, -	£ 64 18 9
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It is with no invidious feeling that I would here contrast the above with the statistics of crime for the city of Toronto for 1850, the number of parties apprehended there being 1,608, the city having a similar amount of population with the Huron. Such, however, is the melancholy



difference between a city and an agricultural population.

In this favoured portion of the province of Upper Canada—blest with a salubrious climate and a fertile soil, watered with crystal springs and brooks in every direction, reposing upon a table land whose natural drainage flows uninterruptedly onwards to the streams and great rivers which intersect it in every quarter towards the noble Huron or lake St. Clair—the energies of the people have been steadily devoted to practical progress and improvement, having in the short period above alluded to brought upwards of eighty thousand acres of the wilderness under cultivation, erected five thousand dwelling-houses, fifty-six schools, fourteen churches, twelve grist mills with nineteen run of stones, five oat and barley mills, five distilleries, two breweries, eight tanneries, and twenty-four pot and pearl ash factories.

Among other matters which crowned their industry in 1850, I may shortly state the following productions:—

Wheat .....	292,949 bushels.
Barley .....	13,012 "
Rye .....	2,181 "
Oats .....	215,415 "
Peas .....	54,657 "
Indian corn .....	5,352 "
Potatoes .....	210,913 "
Buckwheat .....	673 "
Mangel wurtzel .....	297 "
Turnips .....	143,725 "
Hay .....	12,823 tons.
Flax or Hemp .....	7,359 pounds.
Maple sugar .....	351,721 "
Wool .....	54,347 "
Fulled cloth .....	10,303 yards.
Linen or cotton cloth .....	1,197 "
Flannel or other unfulled cloth .....	41,397 "
Cheese for market .....	7,761 pounds.
Butter for market .....	59,873 "
Beef or pork for market .....	1,308 barrels.

And they further rejoice in the possession of the following stock:—

Neat cattle .....	26,260
Horses .....	2,646
Sheep .....	20,022
Hogs .....	14,655

The above gratifying examples speak loudly for the industry of the settlers; and where hired labour can with difficulty be obtained at a high remuneration, notwithstanding the yearly increasing ratio of new comers, and moreover where all are diligently employed in the onward march to happiness and independence, we may truly be thankful to a superintending Providence that prosperity is in the ascendant, and that crime is on the decline.

All which is respectfully submitted by  
DANIEL LIZARS,  
Clerk of the Peace.

Office of the Clerk of the Peace, }  
Goderich, May, 1851.

A CRYSTAL COW-HOUSE.—An experiment of this nature has been tried by T. W. L. Lawford, Esq., F. H.S., of Firdail, near Llandilo. The building is 96 feet long by 18 feet wide. Mr. Lawford has found

that his cattle increase more in health under a transparent roof than under one of impervious material. And not only is there this advantage, but a cow-house constructed of glass is cheaper than these now in use.—Mr. Lawford has flowers, strawberries and grapes, &c., growing under the same roof, which expedient constitutes another advantage, as an amount of heat is secured, which is favorable to the cattle, and repels frost. He has been so much pleased with the success of the experiment that he has erected a larger one for the accommodation of two lines of cattle.

#### CAPABILITIES OF CANADA—PROFESSOR JOHNSTON, &c.

For the Canadian Agriculturist.

{ WOODSTOCK, C. W.,  
March 29, 1852.

SIR:—Having carefully read, and still more carefully thought over, Professor Johnston's able work on a visit to New Brunswick and the Northern parts of the United States, it has frequently occurred to me that it would be of inestimable consequence to this Province to induce him to extend his services to it. I believe even Canadians themselves (except some few surveyors and others whose vocations call them all over the Province) know little or nothing of the Agricultural capabilities of the different sections of their country, and there are few people who would not appreciate the value of such information. The general ignorance of the English public concerning Canada also requires very great enlightenment in all that relates to the soil and climate of this Province. I believe that in all respects there can hardly be a finer country in the world than Canada; but, in England, Canada is classed in the same category with Hudson's Bay and the extreme North of the continent, viz., intense frost and snow for eight or nine months in the year, and violent heat, with a plague of flies, for the other three or four. Professor Johnston's work on New Brunswick and the late very creditable show made at the World's Exhibition in Hyde Park, by Canada, certainly ought to have disabused the minds of the English public on that point; but still official information, derived from one of his high standing, would certainly be of great advantage to the country in pointing out a vast field, not only of lands already cleared, but also in our primeval forests, for the industrious emigrant to achieve for himself and his family a certain independence, and that, too, without forfeiting his rights and privileges as a British subject.

But more particularly would I insist on the immense, the inappreciable value to the farmer of information from a man of his great acquirements and experience. Pointing out our best and most fertile tracts of land, with the geology of each, detailing all the points of husbandry

observable during a lengthened stay in the Province, holding up the good for imitation, the bad for a warning, it would be both for the present time and for ever, invaluable for reference and instruction.

And surely a country that possesses a Board of Agriculture, in direct communication with the Government; a national University in which Agriculture holds a distinguished place for study under its able Professor; a Legislature that devotes no small portion of its energies to fostering the most ancient, the most necessary art of all, that of producing food for the maintenance of human life, would surely not object to lead the way, if applied to in order to provide the necessary means for defraying the expense of the proposed visit. If this desirable arrangement could be effected, Canada would thus unite all the energies she now possesses in harmonious co-operation for the greatest benefit which could be bestowed upon the whole community, the practical development of her immense and yet untried Agricultural resources.

I remain, Sir,

Yours faithfully,

A HAMILTON FARMER.

We strongly recommend the important suggestion of our correspondent to the consideration of our legislative authorities, and all who can influence public opinion.

#### IMPROVED BREEDS OF CATTLE.

*For the Canadian Agriculturist.*

DEAR SIR,—I must trouble you once more, on the comparative merits of Herefords and Short Horns; and by that time, I suppose Mr. Parson's statistics will appear and speak for themselves. If they require any further answer, I will reply.

I know there has been some instances of Durhams producing an extra quantity of milk, and in a few instances a heavy amount of butter, but this proves nothing; on the other hand, in eight cases out of ten, it takes the milk of two Short Horn Cows, with a quantity of meal added, to raise a bull calf fit for sale, in the present state of the Short Horn Market, where flesh, even of inferior quality, fills the eye of the high priced purchaser. As long as this state of things exist, the buyer and seller are both losers, for it is an unprofitable system to pursue. The former is deceived when the calf is reduced to store condition, which he must be, to do the service required, and the herd of the latter is disgraced, when a true and correct system has reduced him to a proper breeding position, to the injury of his constitution. His defects are then made plain to the eye, which so costly a covering has hid, and decidedly to the discredit of both parties. I am not saying this to practical breeders, for I know they are already aware of it; but in order to sell

their stock, are obliged to suit the eye of the unskilled novice. A large male without quality, will often suit such customers, and such an animal is a curse to his owner and the country. Good breeders should not allow themselves to be led away from a proper standard of excellence, by such temporary inducements, and the milk and meal given is scarcely ever taken into proper consideration. I am plain to say that this is the principal error of Short Horn breeders, large forced size has been too much their object, more especially in sires. Let me here state one fact, that I have observed through life. A large coarse cow seldom or ever produces a heavy, meaty, quality ox, or steer; they are generally bred from cows of medium size. Symmetrical, compact, and short-legged beasts are those that weigh, and suit the first class butchers and consumers. I would rather trust the smaller than the larger size for this, with equal pedigree. A large coarse size never produces a prize, or saleable offspring. Breeders' herds should be uniform in size and symmetry, and whenever their object has been extreme size, at the expense of fashion, their failure has always proved certain. Short Horn breeders, in attempting this, have increased their size in paunch and bone, with which is invariably connected hollow crops; with these objections other inferior points follow, such as wide edge, or round bone, often wider than their hips, their rumps short and low, with high tail. Such animals have a thick heavy thigh, the thick coarse muscles running from the round bone to the hock, forming a thick coarse buttock, supported by a large boned, coarse leg. The sides, as Cully describes, "being one laying of black flesh across another; the shoulder bones large, the points projecting. Such beasts are sure to be bad flabby handlers, never (on ordinary keeping, get very thin; are large consumers) but never get fat; will get fleshy, but, when it is on, is no better than bull beef."

I have handled many Short Horns, with high pedigrees, with all the above objections, and know it is the descent from this combination of evils bred in them, that has caused their great overthrow, at Smithfield Show. The butchers have been deceived; they do not die the weight they appear to live, and the quality of meat will not suit the London customers. Mr. Gurrier, the well known and extensive salesman, for upwards of forty years, in a letter to me formerly published in the Albany Cultivator, says: "I cannot sell a Short Horn in Smithfield, to first class butchers, as long as there is a Scott or Hereford in market. This is undoubtedly so, and has been for upwards of twenty years." Another fact. They have been puffed up by writers who were not practical men, and those who did not know their own qualities, and who gained their information from others no better informed than themselves. Most of these men have been paid for that puffing, which I can prove.

I will show one case of extraordinary milking Herefords, although I could refer to several; but that is not the object; a good average produce of twenty cows for nine months would be desirable, which I will endeavour to procure at some future

period, when circumstances will admit. Mr. Kingman, of Clark County, Ohio, states in a letter to the *Albany Cultivator*, for July 1841, page 116, "that a neighbour of his had a Hereford cow that made sixteen pounds of butter per week." This is enough for any cow, and must be quoted as *extra*. I will now quote a letter to me published in the *Cultivator*, from Mr. Turner, Court of Noak, Herefordshire, England, a breeder well known and approved as an excellent judge, and whose sales of Herefords have been as high as most men's. He says: "As regards the Herefords for milking purposes, I can speak from experience, that, when well kept, few will answer better. I can give an instance of a prime cow of my father's producing thirteen pounds of butter per week, when allowed hay and cabbage the whole of the winter; but the principle of the Herefords being the stock, little attention is paid to the dairy. We all know, to keep up cows to their milk, requires the most nutritious food, which is seldom allowed to cows in this country.

I will now quote my own dairy; and will refer you to a letter of mine, in *Albany Cultivator*, 1843, in which I gave a statement of butter made from my cows, taken from the book of Mr. Sheldrick, who skimmed the milk, made the butter, and kept an account of it, and the cheese and cream, as it was sold. What we used in the house was not included, which was no small item. There were nine three years old heifers, with their first calf, two four year old, and one seven, milked during the month of March; I sold Cherry, a three year old, on the 2nd of April; from that time until the 1st of October, I milked eleven. The following is a statement of butter and its equivalent:

From March 1, to October 1, butter	-	1456½ lbs.
35 cream cheeses, equal to 3 lbs. butter each	- - - - -	105
113 quarts of cream sold	- - - - -	113
		1674½ lbs.

I do not bring this forward as anything *uncommon*—it is not so; but shows the herd in its *general produce*, and, I think, for so large a portion of heifers, is *passable*. This was done on common keeping, and dry weather in August and September, and on land not adapted for milking purposes. The pastures were clover and timothy, on high, sandy, hilly soil, at Albany. On the following year, 1844, I submitted another statement of the amount of butter made from the 5th to 11th of January, from some of the same cows fed on brewers' grains and hay:

Lucy, 4 years old, calved Nov'r 28	-	7 days.
Martha, 8 do. " " Dec'r 28	-	7 "
Catherine, 4 do. " " Jan'y 2	-	7 "
Victoria, 4 do. " " Jan'y 4	-	5 "
Spot, 4 do. " " Jan'y 4	-	5 "
Perfection, 4 do. " " Jan'y 4	-	5 "
Matilda, 3 do. " " Jan'y 7	-	2 "

—  
38 days.

Equal to the milk of one cow, thirty-eight days, we had forty-eight and a quarter pounds of butter weighed in separate pounds. This gave a fraction over 8 lbs. per week for each cow, on an

average. These are the only times I ever made trial of weight of butter, and these were made as from *every day's proceedings*, not from *forced feed for the purpose*, but at the spur of the moment. When my dairy was called in question, I referred immediately to my housekeeper's books for the actual weight as it was. The last statement was made as soon as the butter was out of the churn, made up and weighed, and the number of days of each cow reckoned. It was then sent to the *Cultivator*. The calves of these cows were all raised on skim milk, and never allowed to suck the cows at all, which I think is the only true way to raise cattle for profit. If an animal is forced when young, you must continue to feed high through life; a calf kept in *growing condition*, is all that is necessary; they would not be suitable to sell to a *novice* at that age, or show for a premium where judges make *flesh* the most predominant and prevailing standard. I will send you the weight of butter of my whole herd, at some future period, when some of your Short Horn men have produced a similar statement of their herd, taken from the book of their dairy maid, without forcing.

I wish the Board of Agriculture in Canada, and members of New York Agricultural Society, would take some steps to test the merit of the various breeds. It is perfect nonsense to say one breed is not better than another. I contend that Herefords will do best on any soil, in any climate, and will live where any other kind of cattle will live, and pay more than Short Horns on *high keeping*. It is those only who say they cannot contend against each other, who *fear the result*. Let these Societies offer premiums that would bring them into fair competition with each other, it would be the best premium they could offer, and one that would accomplish most. All I ask is a clear stage *and no favour*.

Mr. Parsons was probably led into the error of the *early maturity of Short Horns*, by reading Mr. Keary's essay, which Mr. Smythies *proves, in answer, to have no foundation at all*,—and in the latter part of a short letter, Dec. 30, 1850, he says: "Mr. Keary, I have no doubt, was led into his error by observing that Short Horns were usually slaughtered at an early age, and *knowing little about Herefords*, was not aware that the treatment of the two breeds generally was totally different, the Short Horns being high kept, and on the best land from their birth, and brought out at two years old, while the Herefords are bred in a country where there is a great deal of poor pasture, when they are kept until two years old, and then sold to feed; but this does not prove that, if the Herefords are as well kept, they will not come out as soon, but the contrary has always been the result, when they have been tried against each other. The late Duke of Bedford tried it, and the Herefords beat the Short Horns. I remember another instance, where the result was the same. The Rev. Henry Berry, who was a celebrated Short Horn breeder, showed a yearling Short Horn Heifer at Sir Charles Morgan's show at Trediga, and was beaten by a yearling heifer of Mr. John White's of Upleaden. Mr. Berry challenged to show the two heifers again the following year. Mr. White accepted

the challenge, and I saw them both there the next year. Mr. White's Hereford had gained 112 lbs. more than Mr. Berry's Short Horn; this was to be the only criterion by which the bet was to be decided."

After the instances I have adduced, and I have never met with a single instance where the result has been the other way, I think I have a right to conclude that Mr. Parsons' letter has no foundation *in fact*, and his position had no right to have been taken. I think it is generally admitted, even by Short Horn men, that the Hereford oxen are best for the yoke.

As a "finis," I copy Mr. Smythies' last letter from the *Mark Lane Express*, which please publish; it is strong, *sound*, and every word of it true.

I will write you an article on the principles of breeding, if you wish it.

Yours sincerely,

WM. HY. SOTHAM.

P. S.—Please publish this in your May number, and I will send you Mr. Smythies' letter in my next, which is very strong and sound.

#### ON THE USE OF GYPSUM AS MANURE.

(From the *Paris Star*.)

MR. EDITOR,—In complying with your request to state the advantages of Gypsum or Plaster of Paris, as manure, an observation of the late Sir John Sinclair, who for many years was the respected President of the Board of Agriculture in Sackville street, will not be inappropriate, "That man who grows two blades of grass where only one grew before is a benefactor to his country," now the free application of Gypsum will not only make every farmer so doing a benefactor to his country, but most certainly a benefactor to himself also.

The time is now at hand, when the application of Gypsum as manure, will be most effective, this fact will be explained in the solution of the Yankee maxim, that "snow is the Poor man's manure." The Chemists have proved that Ammonia is an essential ingredient in all manure, and that it is extensively deposited in snow, and Ammonia, being a Volatile Alkali, it will to a considerable extent, be dissipated if not fixed by Gypsum, for which it has peculiar affinity. This will be sufficient to show that Gypsum should be sown as early as possible after the snow is gone.

Any practical Farmer from the best Agricultural Districts in England, where they lay out from two hundred to five hundred dollars annually in Guano and Bone Dust, would scarcely believe that results equally beneficial to our Grass and Hay Crops are attained by the application of this mineral at the trifling cost of 25 cents per acre. In recommending the liberal use of Gypsum, I have at present only to state a few remarks on the kind of Gypsum most beneficial as manure, and in the next place, the crops and description of soil on which its agency is most effective, much has been stated respecting the compara-

tive merits of the pure white and the slate colour or brown variety; from my own experience during fifteen years, I am prepared to prove that the slate colour Gypsum, so abundant in the mines near Paris, is by far better for manure, than the white variety prevalent near Caledonia, this fact may be satisfactorily explained on scientific principles from its two-fold agency. It is well known that Carbonic Acid Gas constitutes a large part of the brown Gypsum, it is indeed the Carbon that gives the colour, and any one may satisfy himself of the presence of the Gas by going into the mill when this kind of Gypsum is grinding; in bringing proof of the powerful agency of Carbonic Acid Gas as a stimulant to vegetation, its effect may be seen on a large scale in the water meadows in the chalk sections of England, my own meadows of this description in Dorsetshire were annually fed off twice in the spring with sheep, and afterwards grew two Tons of Hay per acre, the value of such meadows vary from two pounds to five pounds per acre per annum. It is a remarkable Geological feature in America that there is an entire absence of the interesting and useful mineral called or known as chalk, which in Europe extends over a large section constituting immense deposits of Lime in combination with Carbonic Acid Gas, from the surface to unknown depths, some of the springs in these sections are saturated with Carbonic Acid Gas, and hence the extraordinary fertilizing effect of the water. The great chalk formation, properly so called, commences in the Eastern Counties of England, and dips in the S. E. under the Isle of Wight and Purbeck, but rises again in the S. E. in France, is again found in the Mediterranean seas and in ancient Palestine, and again in the distant S. E. constituting the the sheep walks in Australia; when surveying the extensive manors of the Marquess of Salisbury in 1836, I was directed to make a series of Borings to ascertain the angle of Dip in this great Basin, so well described by Dr. Buckland, now the afflicted Dean of Westminster.

Having already exceeded the limits of my intended communication, I must postpone the remaining topics as to crops and soil, to some early leisure, and have only to add a remark or two on our position and prospects. Although we have not in this country any one at the head of our Department whose experience and general position will approximate to the attainments of the Illustrious Baronet before alluded to, still I very much disapprove of the conduct of those who are so loud and severe in their condemnation of untied men, let us see what these unpledged Farmers will attempt to do, before we deliver our verdict, possibly my old friends the Hon. Inspector General, and the Hon. Malcolm Cameron, with the lucky batch of young Agriculturists at our new Institution may teach us some great practical lessons, to which I for one, shall listen with all due humility.

Your obedient Servant,

HENRY MOYLE.

Sheep Walk, near Paris, C. W.

April 1852.

## MEASUREMENT OF LIVE STOCK.

If the breeders of stock would measure their animals at stated periods of their growth, carefully noting their condition and keep, and all other circumstances affecting their progress, much light of a practically useful character would doubtless be thrown on this very interesting and highly important department of rural economy. *Weight* is an element that should also be taken into such calculations. Few farmers, however, have the means of readily weighing live animals, whereas measurement may at all times be easily taken.

We make the foregoing suggestion from having been favoured with the subjoined calculations by the Honourable ADAM FERGUSON, relating to a portion of his own herd, which, as is well known, consists of the improved *Short Horns*, from the celebrated Bates' blood of Kirkleavington, in England. The following measurements refer to Heifers calved in 1850, and kept in the ordinary way.

<i>Name.</i>	<i>Girls.</i> Feet. Inch.	<i>Length.</i> Feet. Inch.	<i>Date of Meast.</i>
Mayflower, - - -	5 10	4 7	Dec. 12, 1852.
Adelaide, - - -	5 11	4 10	do. do.
Hawthorn, - - -	5 10	4 5	do. do.
Dairymaid, - - -	5 6	4 2	do. do.
Duchess, - - -	5 9	4 6	do. do.
Sprightly, - - -	5 10	4 10	do. do.
Countess, - - -	5 9	4 6	do. do.
Mayflower, - - -	6 0	4 10	April 17, 1852.
Adelaide, - - -	6 2	5 0	do. do.
Hawthorn, - - -	6 0	4 11	do. do.
Dairymaid, - - -	5 7	4 10	do. do.
Duchess, - - -	6 0	5 2	do. do.
Sprightly, - - -	6 0	5 0	do. do.
Countess, - - -	5 10	4 10	do. do.

## A RUSSIAN PRESENT TO ENGLAND.

The Imperial Agricultural Society at Moscow have transmitted to the Royal Agricultural Society of England, several models of Agricultural machines, as well as samples of farm produce, which await the instructions of the Council as to their disposal. This circumstance affords pleasing evidence of the amity between different nations which the encouragement of Agriculture—an art essentially one of peace—is so well calculated to promote. We should like to see useful importations of a similar character in Canada, and hope that our Board of Agriculture will turn its early attention to the subject.

## CANADIAN FACTORIES,—FURNACES AND MILLS,—AT NIAGARA FALLS.

To the Editor of the Canadian Agriculturist.

SIR,—Having promised to give you some account of my journey round the Lake last month to the Falls, I proceed to do so, not having travelled that road for two or three years.

I could not avoid noticing the very striking improvements in Farm houses and Farmsteads, on the whole route, more especially on the Dundas Road, where you are never out of sight of a good new and substantial Brick, Stone, or Rough-Cast Farm house, on a spot selected with more or less degree of taste, on high ground, and some distance from the Road, unlike most of the old homesteads close to the Road, which afforded the hog pasture and sheep walk, when cleared acres were scarce.

The barns and sheds are also greatly enlarged and improved, I really think many of them covering an acre or more, and I must say I think the finest outbuildings in this Province are on the south side of Lake Ontario. I am unable to say anything of the Wheat or appearance of the Farms, for both the fields and the fences were covered with snow, and the roads so much so that I had to drive through the fields, and almost over the fences. The farmers on all this road have every appearance of plenty and comfort. I was much struck with the fine look of the farmers' horses, of which I saw a great many, the Farmers having turned out in great numbers to sell in consequence of the rise in the price of Wheat. I saw many pairs as good and as fine looking as any of the carriage horses in Toronto or Hamilton, and some of them hauling over ninety bushels of Wheat per load; the farmers looking a cheerful happy lot. During the time I was from home (above two weeks,) I never saw one drunken man, and, of course, not even the shadow of a drunken woman.

You may imagine my great surprise to find in the neighborhood of the greatest water power in the world, the Niagara Falls, all the machinery driven by Steam, except a very fine and extensive woollen factory, lately built by the President of our Provincial Agricultural Association, Thomas C. Street, Esq., M. P. P.

The steam power to which I refer is the property of O. T. Macklem, Esq., one of our late delegates to the World's Exhibition (from the same Society,) whence he brought some very valuable tools and machines; no doubt the finest in the Province. They reminded me more than anything else of elephants standing, in the different shops,—they are so immensely large.

The establishment consists in part of a Tannery driven by Steam, and heated by the spent

bark only of the Tannery, shovelled in like saw dust.

In this establishment they tan both Sole and Upper Leather; quantities of which I saw about the place, and an English gentleman, who travelled with me, said he had never in this country seen Sole Leather so like that made at home. Judging from the space occupied, the quantity of machinery in operation, and the immense stacks of bark and different kinds of stock, the demand to keep such an establishment in operation must be very great, and I am informed that so much as thirty thousand pounds worth has been disposed of in one year!

I also visited the same gentleman's Foundry, which is a curiosity in its way. Machinery, all of the most elegant description, is applied to the manufacture of the various parts of Steam Engines, and other work, and all moving with an ease and precision quite astonishing. On one hand you see iron planed to perfection; then, by another magnificent affair, called a Radial-Drill, which sweeps a circle of sixteen feet, boring is done with an ease and velocity truly wonderful. Another interesting machine is one for mortising iron, forcing its way through it as through wood; there is also a machine for cutting bolts and bars, fitted up with what are called taps and dies, capable of cutting screws from a quarter of an inch to two and a half diameter, and I can only describe the number and quantity of tools and other matters attached to this as legion. I also noticed a series of gauges from a quarter of an inch, male and female, up to six inches, so that all the turning in this establishment is fitted with the greatest accuracy. Self-acting and other turning lathes are all round capable of turning from eight feet diameter, down to the quarter gauge; and I saw one in operation cutting a beautiful square-threaded screw about three inches in diameter—and twenty feet long. But the most interesting and complete of all is a shaping machine, self-acting, which forms iron, without manual aid, into every imaginable shape; it looks like magic; the whole is put in motion by a twenty-five horse power steam engine, built on the premises, operating without noise or vibration, and apparently without effort; and on enquiry I learned that the only fuel used was the wet tanbark, after being used in the tan yard, and consumed by means of a great draft and conical shaped grate bars.

Amongst the other works driven by this engine are two large blast cylinders, one of five feet diameter, which blows an immense cupole in the new Stove Foundry, a building over two hundred feet long, by sixty wide, large enough I should think to make all the stoves required in Upper Canada; the owner must have great faith in the capabilities of the Province to to

CONSUME STOVES; his pattern room is quite a museum; those that can't be suited must be hard to please indeed. I had almost forgotten to mention the Boiler Manufactory, and amongst other things of that sort in hand was a Gasometer, to light the great Clifton House this season with gas, over thirty feet diameter and ten high,—a large iron vessel.

I also visited the Steam Saw Mills of the same gentleman; three on the muley principle in its most perfect form were in operation; the rate at which they run is truly terrific, but everything moves without jar or noise, averaging for each Saw, per day, ten thousand feet of boards, and these boilers heated with the saw dust and slabs, the whole of this machinery, made at the Foundry; and I must say constitute by far the most complete things of the kind I ever saw; and I was informed cost much less than the old fashioned slow mills I have been in the habit of seeing from my youth. Well, we Canadians must live and learn.

And since last summer, in the same place, has been erected a handsome Steam Flouring Mill, belonging to James Cummings, Esq., ex-M. P. P., which, on going over, I found to contain three run of French Burrs, operating night and day; it is quite a model of a Mill, everything of the best, and most improved description; the engine and machinery were built at the same Foundry, the whole partaking of the smooth, noiseless action and elegance of form of their other works. This was the only engine where they required to buy fuel.

Pray excuse the length of this letter; but when on this subject of improvement in my native wilds and snow, (here is the twenty-fourth of March, and six inches of snow on the ground, and snowing as fiercely as if it was December, when last year, at this time, I had five acres of Spring Wheat sown,) I scarcely know where to end..

R. L. D.

Township of York.

We shall be happy to receive similar communications to the above from other portions of the Province. The facts stated by our correspondent are of a very interesting and encouraging character; and many such, we are persuaded, could be furnished by other sections of the country. The manufacturing and commercial capabilities of Canada,—a portion of the earth's surface absolutely unrivalled in water power and communication,—are only beginning to be developed; and how closely the interests of Agriculture are interwoven with the success of these pursuits, most of our readers must be well aware. Our motto should be:—THE PLOUGH,—THE LOOM,—AND THE SAIL.—*Editor.*

## TOWNSHIP OF HAMILTON FARMERS' CLUB.

## DRILL HUSBANDRY.

*From the Cobourg Star.*

At a meeting of the Township of Hamilton Farmers' Club, held at Wilson's Inn, Court House, on Saturday, March 27th, 1852.

John Wade, Esq., President, in the Chair.

Present—Messrs. Sutherland, McNeil, Underwood, Baptist, Stiles, Black, Brown, Masson, Page, Wright, Alcorn, A. J. Burnham, &c.

The subject of Drill Husbandry was brought before the Club by Mr. P. R. Wright reading the following Paper:—

That we are rapidly approaching a period when the substitution of that which is natural, right, and becoming, for that which is chiefly recommended by being traditional, there can be very little doubt, when that which is *wrong* in existing systems, usages, institutions, and conventionalities, must give place to that which is *right*,—when the flood of light, which science is duly pouring forth, from the laboratories of Liebig, Johnston, Norton, and other less celebrated chemists, must penetrate the darkness of prejudice, and dispel for ever, the superstitious pertinacity with which the agricultural body clings to dogmas of antediluvian descent, when the whole world will be lighted up with the brilliant scintillations of science and practice going hand in hand.

The subject which I have undertaken to introduce, has had, like most improvements in agriculture, to struggle through a period of more than a century without having its advantages, as a system, fully recognized. Fifty years ago it was prophesied by an eminent writer that "future experiments would determine the comparative merits of the drill and broadcast methods of growing plants in favour of the "drill;" but, although the prediction is gradually and steadily progressing to its fulfilment, the question is yet so undecided, as forcibly to prove the fact, that improvements in agriculture have been tediously slow, when compared with the rapid advancement of commerce, physical science, and the mechanical arts; the reason for discrepancy, if we except the last few years, may no doubt be found, in the fact, that agricultural improvement has not been the result of the combined influences of science and practice, but the tardy growth of a desultory and contradictory experience.

The plan of cultivating field plants in parallel rows, originated with, or at least was first practised in England, by Tull, in the beginning of last century, and although his system has been proved to be theoretically, and practically erroneous; the operations connected with it are undoubtedly powerful means for preparing the constituents of the soil for becoming the proper food of plants. Tull saw, no doubt, that mere ploughing and rough harrowing were not cultivation, and that the soil required not only to be stirred before sowing the seed, but also after the plants had appeared, in order that weeds might be extirpated, and fresh particles of soil brought

in contact with the root of the plant. He therefore adopted the plan of sowing in drill, and hoeing the interval, and his success without the aid of manure, which he condemned as useless, was such as to attract the attention of the public, and of course its censure also.

Without farther preface, I proceed to point out some of the advantages of Drill Husbandry applied to turnips, but first let me warn those of you who dread a long lecture, that I intend being brief, and pardon me for expecting a little attention; I want the subject discussed that I may gain information, if my views are quietly acquiesced in, then I shall leave this Club meeting, a solitary exception let me assure you, without being improved.

In the northern counties of Scotland, where my experience in Farm operations was chiefly acquired, the most successful growers of turnips have by common consent rendered their cultivation in drills nearly absolute, the only deviation from this course being the market gardeners, whose object is to obtain a numerous crop of small sweet bulbs for the table.

In field cultivation it is the practice to sow on raised drills of various widths, according to the nature of the soil, but in some cases they are drilled on the flat surface—a mode of culture I have determined to adopt; for several years past my turnips have invariably failed, indeed with one exception, they have never exceeded half a crop, and although on such land as mine—a stiff clay loam, one cannot expect great crops, still I deem it possible to go beyond the maximum of mine; my plan has hitherto been that first noticed—to sow in raised drills, on well rotted manure; now in this climate, which is most assuredly from its aridity very unfavourable for the growth of this vegetable, it appears to me this practice has been in my case the cause of failure; in raised drills a much greater surface is exposed, the drought soon penetrates to the manure, which is for the crop, rendered useless, and when we happen to have a thunder-shower, it is the bottom of the drill receives the benefit, whilst the plant on the top is in a few hours as parched as ever—this looks like error, and until I receive more light, shall plough down a sufficient quantity of manure in the fall with a light furrow, use the cultivator liberally in spring, cross plough lightly, drag to perfection, sow in rows two feet apart, and *if the bug leave me any plants*, thin out to 15 inches, hoe as often as required, and trust to Providence for a crop.

It is useless in such a meeting as this, composed chiefly of practical Farmers, to urge the propriety of following out the drill system; but as I met a man the other day, a *rara avis*, who maintained a strong argument in favour of broadcast sowing, I will take the liberty of laying before him and his disciples a few reasons for holding an opposite opinion: the raised drills, which in some soils answer admirably, have these prominent recommendations, the seed can be deposited with perfect accuracy above the manure, perfect facility for cleaning and pulverizing the blank spaces between the rows, and the best opportunity afforded for properly hoeing;

the turnip requiring that the earth should be drawn from the plant; these are advantages which speak for themselves, besides much of the requisite labour can be performed by the horse hoe, or scarifier, (implements which, as the cultivation of green crops in Canada progresses, must come into general use,) by which the ground can be reduced and pulverized to a degree highly favourable to the growth of the plant, whilst their rapidly increasing leaves, and swelling bulbs, effectually prevent the springing of surface weeds; I think, however, that the plan of drilling on the surface, partaking generally of these advantages, has another of paramount im-

portance, namely: that a much less surface is exposed to the powerfully evaporative action of sun and wind, and this, on all soils which are impatient of drought, is certainly to be desiderated; although I have only spoken of the turnip, there is no doubt but potatoes, beets, carrots, and other esculents partake equally in the advantages of drilling.

I shall conclude this part of the subject with a table of experiments made to test the relative merits of ridge drilling, flat drilling and broadcast sowing, from "Dickson's Practical Agriculture," the extent of ground operated on was one fortieth of an acre, and resulted as follows:

First Experiment.	No. of bulbs.	Weight of bulbs.			Weight of tops.			Average wt. of bulbs.	Weight per acre.	Average dis. of each T.
		cwts.	qrs.	lbs.	cwts.	qrs.	lbs.	lbs. oz.	tons. cwt.	
No. 1. Raised drills 27 inches wide . . . . .	354	8	1	1	1	1	3	2 9½	16 10	17x27
2 Flat drills 21 inches . .	428	7	1	15½	1	1	5½	1 15	14 15	17x21
3 Broadcast . . . . .	568	7	2	12½	1	0	11½	1 8	15 4	17x17
<i>Second Experiment.</i>										
No. 4 raised drills 27 inches . . . . .	334	8	3	0	1	1	22	2 15	17 10	17x27
No. 5 Broadcast . . . . .	628	8	2	2½	1	1	8	1 9	17 8	16x16

Although the system I advocate for our climate—drilling on the flat surface—appears to disadvantage in these tables, I think a similar trial here would produce a different result; and although broadcasting comes close to raised drills, it has one disadvantage at least, so far as Rutabaga is concerned, viz., that the larger the bulb is, the more nutritious, and if tried by this standard, the value of the crop would be greatly deteriorated.

I believe it premature, in the present state of our husbandry, to speak of the practice of drilling peas and other leguminous plants, but in the well farmed districts of the mother country it has generally obtained and has proved a preferable mode to broadcast sowing; all such plants, especially in case of blight, or premature ripening, have a tendency to leave a foul stubble, and the purpose of a bastard fallow is completely defeated, if the crop has not been subjected to the meliorating influences of the hoe.

I now observe, in regard to the drilling of cereals, that in every district of the old country eye, and in this, where improved cultivation prevails, the practice of drilling wheat is steadily progressing, the advantage of a drilled over a broadcast crop (if the hoe has been used) is the cleaner condition of the land afterwards, is one which no Farmer will underrate; without the hoe, unless as a preventive for winter killing or throwing out, I beg to be distinctly understood as of opinion that the real benefits of this system will not be apparent—if properly conducted, less labour is really required to grow good crops throughout a rotation by drilling than by sowing broadcast; a small amount of labour applied to

each crop in succession, at the proper season, is more effectual and economical than to leave the whole of the cleaning to be accomplished during the year of green crop, the land will yield its increase more uniformly, and independently of the seasons, than by the broadcast method of sowing when the control of the Farmer over the land almost ceases as soon as he has sown the seed and harrowed it in.

The principal error which has been committed in regard to wheat drilled on light land has undoubtedly been the use of too much seed, thus producing more plants than can be properly matured, for as our friend Mr. Page remarks (on a kindred subject) "if there is only sufficient nourishment for two plants in a given space, it is self-evident five must starve." On thin soils, drilling and thin seeding should go hand in hand, and be followed up by a frequent use of the hoe; the fact is overlooked in too many cases, that a thinly drilled crop of wheat will withstand more drought, and produce a better yield, on thin soils, than if the land were sown thicker, and this holds equally in regard to broadcasting; a too thick drilled crop is evidently in a worse condition than if sown broadcast, for every practical man must have observed the tenacity with which plants in rows maintain their hold of the ground; whereas in broadcast it generally thins out of its own accord and overcrowding is partially remedied, the former, the result of the seed being all equally deposited at a uniform depth, the plants in consequence all equally rooted; while in the latter, the chance operation of harrowing covering the seed unequally, producing unequally rooted plants and the weak die out to make way for



strong. To show clearly one advantage of the drill over the old method which most of us will be inclined to value, namely increased yield per acre, I submit the result of an experiment made 50 years ago, and of undoubted authority.

Drilled acre			
Produce 46 Bushels @ 5s. 6d.	-	-	£9 18 0
Rent seed and cost of cultivation	-	2 11 10	
			£7 6 2
Broadcast acre			
Produce 30 Bushels @ 5s. 6d.	-	-	8 5 0
Rent seed and cost	-	-	2 12 3
			5 11 9
Balance in favour of drill	-	-	1 14 5

Many similar experiments have been made affording much the same results, and yet with these facts staring us in the face, we still adhere to a practice, which has little to recommend it but its antiquity, what stronger proof need we of the apathy which so tardily adopts any agricultural improvement?

In thus briefly introducing the subject for discussion, my object has been more to urge its adoption than enter into practical details, being well convinced *our club* needs no drilling on that head, trusting to stimulate those who have not commenced the practice, to follow those enterprising and sagacious pioneers who have taken the post of honour in this as in other improvements; in conclusion, the advantages of the drill may be summed up briefly as follows—a saving of seed equal to at least 75 per cent., probably 100.

The plant will maintain its hold of the ground during the prevalence of frosty nights and warm suns—the thistle, wild mustard, and other pests, are kept in proper subjection if not eradicated,—the soil pulverized and exposed to the action of air, increasing its fertility—the crop is not so liable to lodge—the yield per acre is increased,—and we have a clean stubble—I now place the subject in your hands, and trust it will not be left without a thorough separation of the wheat from the chaff.

Mr. Sutherland was sorry to say that his experience on the subject was so very slight that he could say very little about it; thought that the clean or fall drill crops were kept the better; had had a good deal of difficulty to contend with last year with his root crops, as he had sown them on land where he had hay the year before, and that required a good deal of preparation. He did not approve of sowing carrots too thick—when sown very thick they came up so very delicate at first that he thought they never recovered; had a very clear proof of it in his own carrots last year; was perfectly convinced of the advantages of sowing all root crops in drills; was afraid with grain crops, it would be too expensive.

Mr. McNeil was not at all adequate to make any remarks on the subject of drilling crops, if it had been a brick or stone wall he would have been able to give an opinion on the subject; he just did as his neighbours did—removed stones when they were in the way, and made drains in wet places; he “poutered” about until he had got his place into pretty good order.

Mr. G. Underwood would not trouble them with any remarks, as he had not been very successful with his root crops for the last two years.

Mr. C. Stiles hoped he should be excused, he was but a young farmer and had come to learn.

Mr. Black had used a drill both in the Old Country and here, and thought for fall wheat it possessed great advantages; had not had much experience in sowing with the drill, but he intended to sow all his grain with the drill this spring.—Spring Wheat, Peas, &c., because that when sown with the drill you can cut out the thistles and other noxious weeds in the rows; intended to sow his peas with the drill, in rows about eighteen inches apart, so as that he could work between the rows with the scuffer—the only difficulty would be the horse trampling on the pea vines, (in reply to questions from several members, Mr. Black stated)—that it took considerable less seed with the drill, but that it took more time to sow with the drill than when sown broadcast; thought that the seed saved by the drill, would more than pay the extra labour; thought a bushel and a peck of wheat was quite enough to sow to the acre with the drill; one great advantage was that nothing trampled on the seed after it was sown with the drill, so that no seed was lost by the horses treading it too deep—the drill he sowed with was “Pennock’s;” it sowed in rows nine inches apart; thought it better than any drill he had ever used either here or in the Old Country; the same drill served both wheat and peas; thought Mr. Wright’s ideas about drilling winter wheat correct; had some sown both broadcast and with the drill, and knew a marked difference between them; thought that drilled wheat would not throw out—it rotted out last year, but did not throw out; his drill cost 100 dollars.

Mr. Brown, after what had been said, could not add much; had not used a drill; he approved of what Mr. Black had said; thought that horses had “patched” down a great deal of seed on soft land in the spring; had no doubt but that less seed would do with the drill than when sown broadcast.

Mr. Masson thought that after what had been said, very little could be expected from him; had done nothing at sowing grain with a drill; it was seventeen years since he commenced sowing green crops in drills in Canada; when sowing his turnips the first year, every one told him he would have no crop, because he had sown them in drills, as they would not do here in drills, and he had no crop, because he did not attend to them; but next year he sowed again in drills, and attended to them, and had a good crop—and from that year to the present, he had never been without some turnips; had tried them broadcast, but found drills decidedly better; that no plan that he had seen could beat drills, either for cheapness or for good crops; had never tried wheat for drilling, as he had no drill; if he had a drill, he would certainly use it.

Mr. Page remarked that it seemed to him almost a work of supererogation to advocate the adoption of a practice which was not only dictated by common sense but recognized and sanctioned

by the most experienced and practical men in every country where the art of Agriculture was progressing favourably. It had been a generally received opinion that Jethro Tull was the originator of the system; of this however there was no proof, although it is certain he brought it into notoriety by coupling it with the plan of alternate fallowing and cropping the intervals or spaces for an indefinite time.

Mr. Wright had stated that, as a system, it is now justly exploded, but this must be considered as not applying to the linear practice, but to the idea entertained by Tull that a deep and prolonged culture of the soil was the only measure needful for continued productiveness, and this unaided by the application of any substance in the form of manure; the process consisting merely in a continual stirring every interval either with the hoe, the plough, or the spade, the latter having the preference for effecting the tillage to the greater depth. The spaces thus tilled doubtless gave out a vast amount of nutriment to the growing plant and were at the same time in a most efficient state of preparation for the crop next ensuing, when the rows and intervals would change places; thus each portion of the land would be alternately cropped and most effectually cultivated, and this ad infinitum of the same for any description of cereal, or for a continuation of the same species of plant; but this plan, however beautiful in theory, experience has shown to be erroneous in principle; for although deep and effectual cultivation will materially aid the extension of the roots of the plant and place an abundance of nutritious matter within its reach, and tend to the destruction and decomposition of such surface growth of foreign substances as it may be expedient to get rid of; still as *all* the requisite ingredients for the growth and full development of the plant are not furnished merely by tillage (however excellent) exhaustion, at no very distant period, must ensue.

The wide interval system is almost universally adopted for the growth of the Cabbage, Beans, and Corn, and for Potato and Root crops; the whole of which are unquestionably benefited by the application of the principle advocated by Tull and his enthusiastic admirer Wm. Cobbett, the increase of the crop being proportioned to the frequent culture of the intervals.

There is also a most decided advantage in the adoption of the linear system by the vast economy effected in the application of manure, its action being prolonged by the mode of its deposit by which it is made available to its utmost extent in the rapid growth of the plant; and a great diminution of manual labour is effected by the facilities afforded for the introduction of the plough or cultivator to clear the soil of weeds. The Tullian system may be said to comprise an economy of space, a saving of seed, and the most complete preparatory cultivation for the ensuing crop; but such a system, if advisable at all, could only be beneficial where rent of land is high and labour abundant; and would not be entertained where the reverse of both circumstances occur, and especially in situations where the "fee simple" of the soil may be purchased

for less than one half of one year's rent and charges in those places *which alone* could justify the practice. We certainly should not be in the least surprised to hear of the failure of any person who should, from being enamoured with the system, be enthusiastic enough to adopt it; but it certainly does occasion some surprise to find it again being brought into notice in England; he was then in possession of agricultural papers of the dates of January and February last, wherein it is urged as specially applicable to Ireland at the present time, and thus founded on the practice and seven years experience of a Rev. Mr. Smith of Northamptonshire, England, who, in the course of that period has raised on *the same soil*, seven crops of wheat without any manure whatever; the last crop being the best, about 3½ bushels, and yielding a profit of £8 per acre. The field is tilled in strips of five feet wide, the wheat being sowed in three rows or drills, one foot apart, on the centre of each, thus occupying only two feet of surface, and the intervals tilled by hoeing, harrowing or digging repeatedly during the season, thus cleaning the land, deepening the soil, and supplying abundant food to the growing plant; Wm. Cobbett, however, who in his prodigality allowed four feet of land to each row of wheat—admitted that the grain was subject to blight, and a peculiar discoloration of straw attributable to the constant increase of the sap from the excessive amount of nutriment supplied by the constantly stirred soil.

The drill husbandry suitable to Canadian farming is however of a different character, and will no doubt be widely extended, and it is for us to consider its practicability, its advantages, and its comparative expense.

In newly cleared lands full of stumps or encumbered with stones, the use of the grain drill is out of the question; but the small machines for depositing the seeds of root crops would be available even there, or the manual operation can as readily be adopted in the system of parallel—if not straight—lines, as in the case of potatoes; and the acknowledged benefit arising from cultivation, whether of hoe or plough, affords evidence of the advantages to be derived from that source, and which the line and interval system facilitates to the utmost extent.

The advantages attending this mode of operation in the culture of grain crops are more evident on land which has been longer under cultivation and consequently presenting fewer obstacles to the use of machinery, and consist, in demanding and obtaining a good state of tilth in the soil to enable the machine to perform its operations with precision on which, in a great measure, success depends; and as we well know that darkness is most favourable, if not essential, to germination, a covering to the seed is indispensable, and this is most readily effected by the deposit of the seed in parallel lines, whether by ribbing, ploughing in, or the use of a drill machine; the latter by far the most efficient method, inasmuch as it deposits the seed with the utmost precision, and regulating both at proper distances and at a uniform depth, thus ensuring an equal germination and subsequent growth; again, the great facility

afforded, by a regular interval, for a thorough weeding of such plants as are essentially prejudicial to the growing crop, is one of the prominent advantages of the drill system. Our friend Mr. Black has adverted to the mischief ensuing to a grain crop where those especial plagues to the farmer—the Canada thistle and charlock or wild mustard abound; to eradicate which, under the broadest system, is in fact to sacrifice the crop, as the destruction of the one is accompanied by the annihilation of the other; this, the drill or row system obviates to the greatest possible extent by enabling us to remove the vile intruders at the least danger to the cultivated crop, and at a less expense of time and labour than by any other system. But these advantages are not all which *machine* drilling affords, as a great saving of seed is effected to the amount of fully one-third; and this is to be considered independent of the mere question of expense, for if *two* grains are sufficient for a given space, the third is not merely superfluous but positively injurious.

The question of expense seems satisfactorily set at rest by the testimony of Mr. Black and others, who, taking into account the efficiency with which the work is performed—no waste being possible—an actual saving of the cost of one-third of the seed and assurance amounting nearly to a certainty of a successful issue, so far as human ingenuity and well directed skill can set defiance to adverse influences. These advantages of the labour saved, lessened expense and clean land, counterbalance any loss of time occasioned by a rather less speedy mode of depositing the seed than that offered by the old broadcast system;—taking all these things into consideration I am, Sir, most decidedly in favour of drill husbandry for all crops whenever practicable.

*(To be concluded in our next.)*

#### WHAT IS CAPITAL?

We have rarely seen the commoner class of fallacies in vogue with particular reasoners on the subject of capital, and the influence exercised by its growth upon the progress of a community, so neatly disposed of as in the subjoined extract. It is from a lecture, the whole of which is admirably reasoned, and well worthy of careful perusal, delivered by Mr. G. R. Porter to the members of the Literary and Scientific Association of Wadsworth, England.

A very few words will suffice to explain what is meant by the word Capital. With many persons the term is synonymous with money or its substitutes, and is limited to that one object, a notion for which it is difficult to account, since it must be evident to every one, that in parting with money for the purchase of anything having value in exchange, we do not divest ourselves of capital, but simply change its form; a house, a ship, a ton of sugar, represent, and are, capital, as much as coined money, or notes of the Bank of England. Capital, in its chief designation, is saved labor, the result of some service which has previously been rendered to others, and which entitles the performer of that service

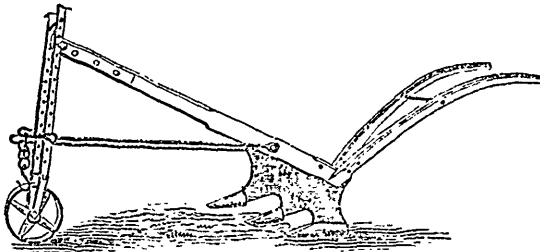
to command at pleasure an equivalent service from others. Money is of the greatest use in simplifying the operations implied in this description, and which are of this nature. John has performed a service to William, which entitles him to demand an equivalent service in return. For example, he had given a day's labor, and has thus acquired the right to claim a day's labor in return; but he has no need of the kind of labor which William can render, and he takes from him, as its equivalent, a sum of money which will enable him to purchase an equal value or service from another, and this money he may exchange for food, or for any other needed object of consumption. If the operations of society were limited to such transactions, there could be no accumulation of capital. Let us, then, assume that John gives six days services, and obtains the means for commanding the labour of an equal portion of time from others, but that he uses or consumes only the equivalent for four days' labour. He thus becomes a capitalist, and possesses saved labour to the value of two days' services. The simple operation thus described is the ground-work or origin of all capital. In the progress of society there is an apparent departure from this simplicity, and it is then often seen that accumulations of capital are made by men who never perform a day's labour, but who accumulate by putting by a part of the revenue derived from property, which is never the produce of services previously performed by themselves, or by others from whom such property has been inherited. It will easily be seen, that the revenue thus derived is of the same nature with the return made for active services. If I lend money to a tradesman, and by that means enable him to turn his exertions to a better account, I certainly perform towards him a service which entitles me to a share of such extra benefit. Or, if I employ my capital in building a house which that tradesman inhabits, it is the same thing as if I advanced the money needful for his building the house himself; he remains with his own capital in hand, instead of having to invest it in bricks and mortar, and thus am I equally entitled to a share in the profits of that capital, which profits could have had no existence but for the service I have rendered to him in building his dwelling. Capital is in such manner employed in rendering services to others, whenever its possessor is so enabled to draw from it a revenue or means of subsistence. If I use my capital in constructing and furnishing a house for my own residence, it cannot be said that such occupancy renders any service to another, and consequently I cannot draw any revenue from such property.

From this simple statement it will be evident that the more capital there is in a community, the greater amount of services will be performed, and, consequently, the greater will be the amount of comfort and happiness diffused among its inhabitants. Even in the case just cited, of a man's occupying his own house, he performs a service to himself, and, as he is a member of the community, he thus adds to the sum of the general enjoyment, paying himself for the use of his saved labor by means of such enjoyment, and

avoiding the necessity, which would otherwise exist, for rendering an equivalent service to another capitalist whose house he would inhabit.

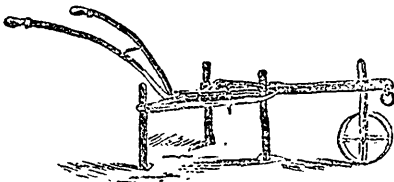
Capital is never designedly left unemployed, and, consequently, is always actively useful in promoting the good of mankind, by which means alone can its possessor draw from it any real advantage. All classes are in some degree or other

benefitted through its accumulation, but chiefly those who depend wholly or partially upon their exertions for the means of subsistence, and whose services are more liberally required where capital abounds than in countries where it is deficient, that is, where the fund out of which services must be required is small in comparison with the number whose means of subsistence depend upon such requital.



SUBSOIL PLOUGH.

The great utility of the Subsoil Plough, particularly on hard heavy soils, long subjected to frequent cropping, has been fully tested by an extensive and varied experience. The above engraving represents a plough that has gained great favor and been largely used for this purpose, in England. The principle of this plough has been sufficiently tested to warrant the conclusion that it is a very superior and efficient implement; its mechanical construction is simple, and renders it full 20 per cent (by experiment) lighter than the single share plough when working deep, and about ten per cent when working shallow. Each share preceding its follower, lessens its work by breaking up the upper crust of the soil, and the lowest share (which can be shaped as a  $\Delta$  or  $\circ$ ) leaves an arched drain to carry away the top water to the main drains. Four horses will work it in ordinary soil 18 or 20 inches deep. The price is £4 sterling.



HORSE HOE.

This is another English implement, and forms a useful and convenient variety of this numerous class. The accompanying cut represents one constructed of wrought iron, expanding from the beam, and having three share hoes, admirably adapted for cutting up the roots of weeds and stirring the soil to a moderate depth. It can be worked by a light single horse. Price £2 5s. sterling.

CHARACTERISTICS OF THE CAPE HORSE.—

Generally speaking, a regular Cape horse (one whose pedigree cannot be traced to any imported stallion,) is an ugly brute. He is about fourteen hands high, and his chief characteristics are, a low, narrow shoulder, an eye-neck, and a goose-rump. His "paws" are generally pretty good. He is villainously broken; his mouth is as tough as an oak; his pace is a shuffling, tripping, wriggling, abomination, between an amble and a canter, with a suspicion of a "ruu" in it. Put him beyond this pace, and he gallops awkwardly as a cow. As for walking he is innocent of the pace beyond three miles an hour. Trotting neither he, nor his breaker, nor breeder, nor owner (if a Dutchman,) ever heard of. He is apt to be ill-tempered too, often given to kicking, and occasionally to bucking. So much for his evil qualities. His good points are numerous. He is the hardiest of his race. You may feed him on nothing but grass all the year round, and yet ride him 120 miles in two days, and he will show no signs of distress. You may dismount at any place, or even in the open country, drop his rein over his head, and he will stand as long as you may please in waiting for you. You may generally shoot from his back without him flinching. You need never trouble yourself about a stable or a groom for him; he is quite unaccustomed to such luxuries. You may go to sleep as you ride him, for his ugly, awkward-looking pace is the gentlest and easiest of motions, and will scarcely disturb your slightest slumbers. Lastly, you need not fear colds, coughs or any of the ills that horse-flesh is heir to. He is never afflicted with any disease save one, and that is deadly and incurable. It is called the "horse-sickness." It is not exactly glanders, but is more like the violent attack of influenza than anything else. It is a perfect curse to the country, for its remedy has never been discovered, and its cause is in the highest degree doubtful.—*The Cape and the Kaffirs.*

## MR. VAIL'S IMPORTED HEIFER "YARM LASS."

To the Editor of the Canadian Agriculturist.

MR. EDITOR,—Allow me to hand you the pedigree of one of the two Short-horn heifers, which I ordered in July last, from Mr. Bell, the friend and tenant of the late Thomas Bates, Esq., of Kirkleavington, Yorkshire, England. The directions given to Mr. Bell were, to send me two two-year old heifers in calf, possessing as much of the Duchess tribe blood as he had in his herd, well knowing as I did, from a long previous correspondence with these gentlemen, that Mr. Bell's stock was derived from Mr. Bates' herd; and that Mr. Bell's cows were bred to the Duchess bulls of the former Gentleman.

The two heifers were shipped from London on the 21st of August, on board the packet ship London, and arrived in New York, 17th of Sept. last. How well the order was executed, will be seen by the pedigree of the heifer whose portrait is here given. The heifers are both a favourite colour, a dark red roan, possessing in a high degree, the characteristic of the Bates herd, as delineated in an article written by JOHN EWART, Esq., land surveyor, Newcastle-upon-Tyne, and published in the London "Farmer's Magazine," June 1st, 1850, after the sale. Mr. Ewart remarks, speaking of this herd—"magnificent size, straight and broad backs, arched and well spread ribs, wide bosoms, snug shoulders, clean and light feet, small head, prominent and bright but placid eye, were the features of usefulness beauty which distinguished this herd in the very highest degree; whilst the hide is sufficiently thick to indicate an excellent constitution, its elasticity, when felt between the fingers and thumb, and its floating under the hand upon the cellular texture beneath, together with the soft and fatty texture of the coat, evinced in an extraordinary degree throughout the herd, excellent quality of flesh, and a disposition to rapid taking on of fat."

Pedigree of the above heifer, "Yarm Lass." Calved 8th Jan., 1849—got by the Duchess bull, 4th Duke of York (10167)—the dam of this bull is Duchess 51st., and this 4th Duke of York, was purchased at the late sale of Mr. Bates' herd by Earl Ducie at £210 sterling, about \$932, and is spoken of in the same articles above quoted from the "Farmer's Magazine," in the following language—"This animal now the property of Earl Ducie, is the *beau ideal* of bovine excellence; his magnificent size, and perfection in every point of excellence entitle him to consideration, as the brightest gem of the herd; and if not the very best dull bull in existence, he certainly can: not be surpassed." The editor of the Magazine, in an appended note, remarks—"As a proof of this; and what may be expected from

his produce, we beg to observe, that the only three calves got by him, realised the sum of £279 1s. sterling," being equal to \$561 each. (It may be well here to state that "Yarm Lass," is now in calf by the Duchess bull 5th Duke of York, and that he is an own brother to the 4th Duke of York above alluded to, and her time of calving about the middle of the present January.) The dam of "Yarm Lass," is Dinah 2nd, got by 4th Duke of Northumberland (3649)—grand dam Dinah, by 2nd Earl of Darlington (1945) also bred by Mr. Bates—great grand dam Red Thompson, bought of Mr. Bates. By this pedigree it will be seen that the present product of "Yarm Lass" will have three crosses of the Duchess bulls, which will make it seven-eighths Duchess bull blood.

It may not be uninteresting to such of your readers as take an interest in breeding stock, to show how long it may take to breed up a herd of females of a particular family of stock. I may therefore be allowed to remark, that my first importation from Mr. Bates, was in 1810, when I received bull Duke of Wellington and heifer Duchess. Since then I have had from him and Mr. Bell, at different times [including the two recently imported,] five females, and all the females from them I have retained in my herd except two, having now in my herd of this family eight in all. All of these are in breeding condition, except one. It has been my aim to make my herd to consist eventually, principally of this strain of blood.

The young bulls bred from these cows, I have disposed of, with the exception of such as I needed for my herd, and I am gratified to learn from their owners that they have done much good where they have gone. Among those sold was "Halton," when a calf not over a month old, to the Hon. Adam Fergusson, and his friend the late Mr. Wetenhall, of Upper Canada, for \$300. This bull, now over four year old, Mr. Fergusson used to his herd three years, and for the reason that he could not breed him to his own heifers, he brought him to our state show at Rochester last September, to exhibit as *foreign stock*, and for sale. This bull's appearance then, you are aware, attracted much admiration; he was awarded the 1st premium in the class of foreign stock, and was sold shortly after his appearance on the ground at \$300, to Mr. S. P. Chapman, of Madison County. In a letter I received from the Hon. Adam Fergusson, dated November 12, 1851, in speaking of the bull Halton, he remarks—"He has made a most important change on my herd for the better. I am truly happy to find you are still importing. I must have another bull calf, and put myself in your hands to provide me."

My herd now consists of about thirty head, young and old. I beg you to excuse the liberty I have taken in this lengthy communication, and I hope it may be of some interest to some of your numerous readers. Truly and respectfully yours, &c. &c.,

GEO. VAIL.

Troy, New York, April, 1852.

N. B.—On the 18th January, Yarm Lass dropped a beautiful roan bull calf.



## HORTICULTURE,

### THE SCIENCE AND PRINCIPLES OF GARDENING.

#### NO. V.

#### THE AGENTS WHICH AFFECT PLANTS.

#### 8.—MANURES.

There is no branch of plant-culture in which a more thorough change has been effected of late years than in the application of manures. The old fashioned, substantial, simple manures have now very much given way before the use of such as are highly concentrated, or are compounded chemically, or are administered in a liquid state, or contain some single ingredient which the particular crop to be grown, appears, most to require.

Two or three very important results have followed from this alteration in the system of manuring. First, the new kinds of manure are generally of easy application. They travel in a small compass, and may often be put on by the hand. A great deal of the wheeling or carting is thus saved. Secondly they frequently have the ammonia which they contain so fixed by acids as to occasion a prodigious saving of this most effective element, and to avoid altogether the disagreeable and noxious odours common to the older manures. Thirdly, they are sometimes made to contain or combine the element or elements on which particular crops almost entirely feed; the researches of chemistry having laid bare, to some extent, the constituents of many plants, and their consequent requirements. These are all properties of the highest interest and the greatest value.

But there remains another view of the case, which it will not be wise to neglect. Artificial manures seldom act mechanically on the soil.—They do not improve its texture. Nor does their influence often last long. It is transient, and extends but to one or two crops. They cause little or no additions to the soil. The available parts for cultivation do not acquire any extra substance or depth by their use. They are likewise too stimulating for some crops especially permanent ones, and occasion extravagant growth, without corresponding fertility. On all these points, therefore, the common manures must be deemed yet in advance of those more recently devised.

On the whole, it will be well to adopt such new manures as have been ascertained to be good (though there are numbers that are perfectly worthless,) as a general rule, for temporary crops; with the occasional use of the more solid kinds, and the selection of these last alone for fruit trees and more lasting crops.

From the excrements of various animals, mixed with partially decayed vegetable matter, such as straw, the best possible manure may be obtained. Sheep dung and that from birds are among the most powerful, and may be applied simply without any admixture. Horse, cow, and any other manure will be improved by mixing them with vegetable substances, and fermenting

and turning them several times before using.—The addition of a little lime will render them more thoroughly and more immediately efficacious. They should be covered up with earth while fermenting, the less of the ammonia which they contain may be lost.

Guano is the dung of birds, obtained from those portions of sea-coast, whether in South America or Africa, where particular species abound and congregate, and where the dung has been deposited and accumulating for ages. It is, when obtained pure, an excellent but expensive manure for a single crop, and may be applied broadcast at the time of putting in the crop, or sown along the drills with the seeds or sets, or put on just as the crop is coming through the ground. The last is generally the most economical process and the ground should be hoed over a few days after it is finished.

Bone dust is one of the best manures for firm soils, that are not deficient in depth, and it has the merit of being clean and readily applied. It also lasts a considerable time. Crushed bones which are in larger pieces, will be even more durable, and are very effective in facilitating drainage.

Liquid manures are exceedingly useful on a small scale, and especially pot-culture. They may consist of urine largely diluted, or the soakage of a dung-hill less freely reduced, or a mixture of a good handful of guano with a couple of gallons of water, or any of the same processes extended to the required quantity. They can be applied safely to growing crops, and will produce a speedier and a more marked effect than other manures, because the nutritive matter is already in a state of solution. A great deal may be done in this way, in small gardens.

More artificial manures will contain, generally, some solution of the alkalies (soda, pot-ash or ammonia,) saturating any neutral substance, to render them of convenient application; or they may be of a more compound nature. As a rule, these three elements, being those upon which plants are more largely nourished, will form the most certain bases for manures.

The properties of manuring are to stimulate and excite the system of plants into stronger and more luxuriant growth, and, in general, if but moderately employed, to increase their productiveness. Great caution is, however, necessary in adapting the quantity and quality to the condition of the ground, or the plants, and to the objects sought to be obtained. Manures are not usually conducive to a freely flowering condition unless the soil be very poor indeed, or the plant be much cramped and impoverished in a small pot, and liquid manure will then be most appropriate. Fruit trees usually require manuring but it will depend much on their individual habits and character. The more highly cultivated the state of any plant, or the more each particular variety owes its perfection to the highest culture, the more likely it is, in the abstract, to want frequent and liberal manuring. Such are some of the finest vegetables and fruits, and the more richly developed among florists' flowers.—*Kemps' Principles of Gardening.*

## GLASS COVERING FOR WALLS.

We noticed in our last number that glass was about being tried in England for constructing garden walls, and the probability that it would be found both ornamental and more suitable for many purposes than the material ordinarily employed. A writer in a recent number of the *Gardeners' and Farmers' Journal*, says that he has about 1200 feet of garden wall planted with peaches, apricots and figs, and that he intends covering them with glass. The trees are to be trained  $2\frac{1}{2}$  inches from the wall to strong wire, and sufficient space left between the wall and the top and side glass sashes for ample ventilation. Now that the excise duty has been taken off glass, it will no doubt be more extensively used for horticultural and domestic purposes. Water pipes, we hear, made of this material, are already coming into use.

**DANGEROUS GARDENING.**—The most deadly plant ever possessed by Kew, the *Jatropha urens* is no longer to be found there; it has either been killed off like a mad dog, or starved to death in isolation like a leper. Its possession nearly cost one valuable life, that of Mr. Smith, the present respected curator. Some five and twenty years ago, he was reaching over the *Jatropha* when its fine bristling stings touched his wrist. The first sensation was a numbness of the lips; the action of the poison was on the heart, circulation was stopped, and Mr. Smith soon fell unconscious, the last thing he remembered being cries of "Run for the doctor." Either the doctor was skilful, or the dose of poison injected not quite, though nearly enough; but afterwards, the man in whose house it was got shoved it up in a corner, and would not come within arms length of it; he watered the diabolical plant with a pot having an indefinitely long spout. If the vase itself contained a *quid pro quo* he is not to be greatly blamed. Another not much less fearful species of *Jatropha* has appeared at Kew, and disappeared.—*Quarterly Review*, Dec. 1851.

**THE BEST APPLES.**—A winter exhibition of fruits was held at Rochester, and several very fine collections of apples and fine and rare winter pears were presented. When the exhibition was about to close, and while some twenty of the most successful and intelligent cultivators yet remained in the room, it was proposed to call a vote for the best winter table apple (not for marketing,) its agreeable qualities being the chief consideration. The vote was entirely informal, and the following was the result. The large voice for the Melon was probably owing to the fact that some fine specimens, then in perfection, had just been distributed:

Melon, 5 votes, for winter fruit.
Swan, 3 " "
Red Canada, 2 " "
Baldwin, 2 " "
Northern Spy, 3 votes for long winter.

—*Albany Cultivator*.

**THINNESS OF A SOAP-BUBBLE.**—A soap-bubble, as it floats in the light of the sun, reflects to the eye an endless variety of the most gorgeous tints of color. Newton shows to each of these tints correspond a certain thickness of the substance forming the bubble; in fact, he showed in general, that all transparent substance, when reduced to a certain degree of tenuity, would

reflect these colors. Near the highest point of the bubble just before it bursts, is always observed a spot which reflects no color, and appears black. Newton showed that the thickness of the bubble at this black point was the 2,500,000th part of an inch! Now, as the bubble at this point possesses the properties of water as essentially as does the Atlantic Ocean, it follows that the ultimate molecules forming water must have less dimensions than this thickness.—*Lardner's Handbook*.

**MICE AND REPTILES.**—In an English work, called, "The Life of a Soldier," we find the following account of battles between mice, scorpions, and centipedes in Barbadoes. The brief narrative is full of interest: In clearing the ground for the camp, we disturbed a variety of noxious reptiles such as whipsnakes often extraordinary length, but not thicker than a goose quill: centipedes of a large size, whose backs were plated like a lobster's tail; and scorpions. Having heard that mice were natural enemies to the two latter, I procured a few, that I might be a witness of their combat. The arena was the space circumscribed by a glass bell; and upon letting a mouse and scorpion loose in it, a grand display of manœuvring ensued—the mouse flying to bite off his opponent's tail, which terminates in a sting, and the scorpion watching for an opportunity to strike him with it. Should the former succeed in his first object, the latter falls an easy prey, but stung, the mouse is generally the victor. Equal generalship is required in the engagement with the centipede, which defends itself with two small nipper, placed at either side of its mouth, near the poison bags. One of our men found a large tarantula on his shoulder one morning when he awoke, and it suffered itself to be removed without doing him any injury. He brought it to me, as an amateur; and accordingly I placed it under the bell with one of my hardest bitten mice. It immediately reared itself on its hinder part, and extended its long arms, remained motionless in this posture, while the mouse ran round the bell, evidently unwilling to face its new antagonist. This continued a short time; and then, as if under the influence of an irresistible fascination, the mouse jumped suddenly into the arms of the tarantula, which quickly seized him with two nippers resembling the claws of a cat, and situated at either side of the head, and with such deadly effect, that the little quadruped instantly swelled up and burst. I next let loose two or three mice at a time on the tarantula, but they all shared the same fate.

**ANECDOTES OF HORSES.**—In the reign of James I. races were established in many parts of the kingdom; and the races were then called bell-courses, the prize being a silver bell, whence the expression to bear off the bell! In the reign of Charles I. races were held in Hyde Park and at Newmarket, and Charles II. most warmly patronised them, entering horses at Newmarket in his own name; and about this time the bells were converted into cups, or other species of plate, valued at one hundred guineas each. In those earlier days professional jockeys were unknown, but it is curious to hear the opinion of a celebrated writer and distinguished man, Lord Herbert of Cherbury, "The exercise," says he, "I do not approve of, is running of horses, there being much cheating in that kind. Neither do I see why a brave man should delight in a creature whose chief use is to help him to run away!" Lord Herbert might have been a great philosopher, but he certainly would not have been qualified to be a member of the Jockey Club. Cromwell who had himself trained the finest regiment of cavalry then in existence, was aware of the importance of speed and bottom, and Charles II. obtained a large number of mares and stallions from the Levant, so that the Arabian blood was freely mingled with the native breed.—*Bentley for March*.



## SCIENTIFIC.

## REPLY TO MR. SOTHAM'S INQUIRIES.

Mr. Editor:—In compliance with your request to assist you in answering some of the inquiries of your thoroughly practical correspondent Mr. Sotham, I will now proceed to make a few remarks on some of the questions proposed, premising that I only intend answering those to which a satisfactory reply can be given without having recourse to any of those hypothetical assumptions to which Mr. Sotham so strongly and so properly objects.

I will not make any remarks on Mr. Sotham's tirade against science and its cultivators; firstly, because I happen to be one myself; and, secondly, because there is a great deal of truth in Mr. Sotham's assertions, although perhaps they are carried a little too far. If we find that certain chemists or philosophers have been led away by some of their own theories, and have thus promulgated errors which become palpable when put to the test of practice, we must not thence conclude that science is useless as applied to Agriculture, any more than when employed in those numerous arts and manufactures which of late years have been thereby so materially improved. The very fact of such questions being proposed by so excellent an Agriculturist as Mr. Sotham, is sufficient proof of the value of a little science.

Earn yard manure is one of the best if not the very best of all manures for general use, inasmuch as it restores to the soil exactly those substances which have been taken from it—at least to a very great extent. The straw, hay and other vegetable matters which abound in it, will of course restore to the fields exactly those bodies which were removed from them during the growth of the crops, while the excrements of the horses and cattle contain that portion of the same substances which escaped assimilation during their passage through the intestines. A considerable quantity of those bodies called by chemists nitrogenized compounds, is to be found both in the litter and the excrements; and these compounds, soon undergoing fermentation or decomposition, give off among other substances a pungent gas called ammonia: this evaporates into the atmosphere, and, although there are other bodies which also escape, this one is by far the most important, and the one which the practical farmer should most zealously endeavor to retain. This substance, and more especially its combinations, are frequent in guano, night soil, hen manure, &c., &c.; and, as Mr. Sotham justly observes, they must be weakened by admixture of other substances, such as plaster, moulds, &c.:—lime [burnt lime], however, must be carefully avoided, as it possesses the power of

destroying the compounds of ammonia by driving this latter substance out of the mixture in which it may have been contained.

Ammonia [which of itself has a pungent but not disagreeable smell, but is powerfully so when mixed or combined with certain other matters] must be considered as a powerful fertilizer, and it is pretty generally allowed at the present time that many manures owe their chief value to the presence of this substance. It should therefore be retained in the manure heaps by all possible means, among which may be mentioned the use of plaster, clay, charcoal or dilute acids. Fresh urine contains very little ammonia, but a large quantity of certain substances which yield it by their decomposition. These substances, if directly applied to plants, will act as poisons, whether from properties inherent in them, or from their being used in too great quantities; but if the urine be mixed with the soil at a distance, it rapidly undergoes decomposition, ammonia or its salts are formed, they are dissolved by the water contained in the soil, and can now be taken up by the roots of plants not only with impunity, but also with essential benefit.

In answer to the question contained in the last paragraph, I would reply that ammonia is absorbed by charcoal, clay and other mineral substances, in large quantities. The ammonia evolved from decomposing animal or vegetable substances, is generally combined with carbonic acid, forming what is called carbonate of ammonia, and this compound would also be absorbed and partially retained by the above mentioned bodies as well as by gypsum. Their fertilizing powers will thus be increased, for not only will they afford to the plants those substances which they previously contained, such as lime, sulphuric acid, &c., &c., but also the ammonia or its salts which, as already mentioned, are so essential to the vigorous growth of almost all vegetables. Charcoal possesses the property of absorbing an enormous amount of this gas, and it is very probable that the beneficial effect of charcoal in promoting and assisting vegetation is owing to this circumstance, joined perhaps to its great porosity.

Ammonia does not cause the decomposition of green crops when ploughed in, but it is a result of their decomposition, although not formed in such large quantities as from excrements or putrifying urine.

I am scarcely vain enough, Mr. Editor, to hope that the above answers which have been written very hurriedly, will be perfectly satisfactory to your correspondent; but, if not, I may perhaps have an opportunity of explaining myself more fully at some future time.

Yours, &c., H. CROFT.

University, Toronto, April, 1852.

## ADVANTAGES OF STUDYING THE NATURAL SCIENCES.

The superiority of the natural sciences over all other objects of study, to engage the attention, and awaken the interest of pupils, is conceded as a fact of experience by the ablest teachers. This cannot be otherwise; for the infinite wisdom of the Creator is nowhere so perfectly displayed as in the wonderful adaptation which exists between the young unperverted mind and the natural world with which it is encompassed.

On one hand there is the realm of nature, endless in the variety of its objects, indescribable in its beauty, immutable in its order, boundless in its beneficence, and ever admirable in the simplicity and harmony of its laws; on the other there is a young intellect whose earliest trait is curiosity, which asks numberless questions, pries into the reason of things, and seeks to find out their causes as if by the spontaneous promptings of instinct. The study of nature is therefore the most congenial employment of the opening mind, and one of its purest sources of pleasure. Every fact that is learned becomes a key to others; every progressive step discloses wonders previously unimagined. The more we acquire, the greater is our desire to learn, while each advance multiplies the sources of delight instead of exhausting them.

But the advantages of studying the natural sciences are by no means confined to the interest or enthusiasm which they are capable of exerting. They are also eminently fitted to train the mind to habits of careful observation; to teach it discrimination in deciding upon evidence, caution in forming opinions, method in study; to discipline it to patient and persevering effort, and store it with valuable knowledge;—and yet, in our current systems of instruction, how frequently is the mind cut off from the glorious works of Almighty power, and directed to the crude and imperfect performances of man! how often does the bright volume of the Creator, “written,” to use the impressive words of Lord Bacon, “in the only language which hath gone forth to the ends of the world unaffected by the confusions of Babel,” remain a sealed book, while the youthful mind is inflated with fictitious learning, or occupied in acquiring the least valuable kinds of information! It is not to be forgotten, that so long as men neglected the study of nature, despised experiment, resorted to fanciful theories for the explanations of all natural occurrences, and wasted their energies in aimless and sterile speculations, society remained in a condition of barbarism, and learning was only an empty boast—a something of which the great mass of mankind knew absolutely nothing, and which was of little service to those who possessed it. But when at length men became the students of nature, when they began to appreciate the significance of her facts and to search for them with earnestness, then came the knowledge which put stagnant society in motion, which conferred power upon the masses to elevate and improve their condition. Then came the discovery of the New World, of the art of printing, of the telescope,

the microscope, the steam-engine, the chronometer, the power-loom, the steamboat, the locomotive, the electric telegraph, the daguerreotype, and ten thousand other inventions in all the departments of human activity,—and which constitute but the beginning of what yet remains to be done. The benign results which thus flow from the study of the natural sciences, are in an eminent degree characteristic of Chemistry. Its principles are of universal import, of the utmost breadth of practical application, and are involved in all the vicissitudes of being which we daily contemplate around us. And in acquainting ourselves with them, we may not only gain a deeper and clearer insight into the wonders of existence, but we shall likewise obtain the most striking proofs of the wisdom of the Great Maker of the Universe.—*Youman's Chemistry*.

**THE WONDERFUL PROVISION OF NATURE.**—Although eels notwithstanding their voracity, are not, perhaps, very destructive to salmon in their active state, their habits are such, that they would exterminate the species, were it not for a very wonderful provision of nature, which as we do not remember ever to have seen it dwelt upon or alluded to, it may be worthwhile to notice it passing. The history of their spawning is the converse of that of the salmon's, for whilst the latter is oviparous, and produces in fresh water, the former is viviparous, and produces in the sea; and it so happens that when the salmon is hurrying up towards the very sources, of rivers on the same errand of generation, the eel is hurrying on the same errand to the depths of the ocean. Were the eel to remain in the river after the salmon roe is deposited and covered in, its voracity and habit of boring in loose gravel, and even under large stones, would disturb the beds, and lead to the annihilation of the whole salmon tribe. But at this critical time the two creatures are driven by the same instinct, towards different poles; and before the eel re-appears in fresh water, the salmon roe has undergone a series of changes, emerged from its subaqueous dormitory, and becomes a little fish, fragile indeed, and tiny, but in the highest degree vigilant and nimble, not capable of confronting a single one of its numerous enemies in the open field, yet disconcerting and defying them all by the celerity of its flight. Is this an evidence of design, or is it a stroke of chance?—*Thoughts on the present scarcity of Salmon*; by the Rev. Dugald S. Williamson, Minister of Tongland.

**GIGANTIC EGGS.**—The committee of management of the Jardin des Plantes de Paris have just presented to the Hunterian Museum, of the Royal College of Surgeons, the casts of eggs of the gigantic wingless bird of Madagascar (*Eppoyornis maximus* of Geoffroy de St. Hilaire). These enormous eggs are equal in size to 12 ostrich, 16 casowary, 148 domestic hen's or 50,000 humming bird's eggs.

**TUN HOUSES.**—A patent has been granted to Mr. George Tate for the construction of houses and other buildings by fitting together staves, or other pieces of timber, secured together by hoops or binders, and fixed by any suitable method practised by builders, either vertically or horizontally, at any height, upon piles, sleepers or frames, securely fastened in the ground; the joints of the pieces or staves, when necessary being bevelled as required, and wrought either plain or rounded, and hollowed or dove-tailed, or tongued and grooved, or glued up or caulked, or merely drawn

close together by the hoops. The patentee sets forth, that the object of his invention is to afford the working classes "cheaper and better accommodation than heretofore," and doubtless he is able to point to circumstances under which the proposed arrangement would be found useful. For our own part, however, we have no desire to see the exclusive right of dwelling in a tub, long possessed by Diogenes, interfered with, and would rather aid in obtaining for the working classes habitations of a more durable and a less combustible nature.—*The Builder*.

A curious experiment, demonstrating the protective quality of gutta percha against the escape of the electric fluid, was tried on the premises of the London Gutta Percha Company. A series of copper wires, coated with gutta percha, each wire 1000 feet long, and in the aggregate amounting to 275 miles, was immersed in the water of the Regent's Canal—all, except the parts where each wire joined its fellow. The juncture was effected by mere twisted contact, a condition very unfavourable to the ready transmission of the fluid—and the voltaic battery employed in passing the discharge was on the old construction of Dr. Wollaston, consisting of 384 pairs of 4 inch square plates of copper and zinc, put in action by diluted sulphuric acid. On completing the voltaic circuit, the explosion was instantaneous, notwithstanding the wires had been immersed in water ever since the 18th of January. By employing a stronger battery, it is difficult to say what would be the limit of the electrical ignition. The usual plan of inflaming gunpowder, by means of voltaic electricity, consists in making the fluid traverse a slender platinum wire, which thereby is rendered incandescent—a plan which certainly would not have been effective at so long a distance as 275 miles, with the battery employed. Probably it would have been impossible with any battery. The plan actually followed was discovered by Mr. Statham, the chemist at the gutta percha works, and consists in passing the voltaic discharge through a small layer of the salt (probably sulphuret of copper,) which forms when copper is brought into contact with sulphurised gutta percha.

**INTELLECT DEVELOPED BY LABOUR.**—Are labour and self-culture irreconcilable to each other? In the first place, we have seen that a man in the midst of labour, may and ought to give himself to the most important improvements, that he may cultivate his sense of justice, his benevolence, and the desire of perfection. Toil is the school for these high principles; and we have here a strong presumption that, in other respects, it does not necessarily brighten the soul. Next, we have seen that the most fruitful sources of truth and wisdom are not books, precious as they are, but experience and observation; and these belong to all conditions. It is another important consideration, that almost all labor demands intellectual activity, and is best carried on by those who invigorate their minds; so that the two interests, toil and self-culture, are friends to each other. It is mind, after all, which does the work of the world, so that the more there is of mind, the more work will be accomplished. A man, in proportion as he is intelligent, makes a given ounce accomplish a greater task; makes skill take the place of muscle, and with less labour gives a better product. Make men intelligent and they become inventive; they find shorter processes. Their knowledge of nature helps them to turn its laws to account, to understand the substances on which they work, and to seize on useful hints, which experience continually furnishes. It is among workmen that some of the most useful machines have been contrived. Spread

education, and as the history of this country shows, there will be no bounds to useful invention.—*Channing*.

### THE SEASONS.

(Written for the Irish Farmers' Gazette.)

The spring time is coming, the spring time is coming;  
The young buds are starting, the bees are yet humming;

The daisies and cowslips in beauty are springing,  
And the lark and the linnet in chorus are singing:  
The meadows are tinged with a beautiful green,  
And verdure springs up where old winter had been;  
The plough in the soil is now rapidly rolling,  
And the joybells of plenty in triumph are tolling.

The summer is coming, the summer is nigh,  
And the breeze from the west scarcely utters a sigh;  
The corn is green and the meadows are bare  
And diffuse a sweet scent thro' the rarified air.  
Oh! the summer is lovely—ay, more so than spring,  
Tho' the valleys are green and the joyous birds sing;  
Yet the summer to me is more lovely than those,  
With a wreath on its brow of the lily and rose.

Autumn is coming, 'twill soon be in view,  
And it spreads o'er the land a bright, yellowish hue;  
The sickle is sharpened and sweeps all before,  
Like the downfall of armies that battled of yore;  
And plenty, the mother of wealth, dawns on high,  
As she smiles on the scene with a bountiful eye.  
How lovely is autumn! in evening how fair  
Are the pearls that shine in her rich golden hair!

But winter shall come, with his snowy white gown,  
And dispel those fond themes with a dark, churlish frown;  
The blackbird and redbreast alone fight their way  
'Gainst the clouds that have banished the sprightly and gay;  
And the storms that sweep o'er the shadowy plain  
Revive but to bring back the new year again.  
Glasnevin, Feb. 14, 1852. P. C.

### MECHANICS' INSTITUTE SOIREE.

On Monday evening, the annual soiree of the Mechanics' Institute, given complimentary to the Lecturers of the past season, was held in the St. Lawrence Hall. The room was tastefully arranged for the occasion, and was graced by a numerous and respectable audience. At the upper end, at three short tables, elevated on a dais, were seated several of the lecturers of the past season, with a number of ladies and gentlemen—the guests of the evening. Mr. Cumberland, President of the Society, occupied the chair. The Rev. Mr. Lillie having asked a blessing, the tea, coffee, and accompaniments were served round very liberally, and after ample justice had been done, Rev. Mr. Richardson returned thanks.

The intellectual part of the entertainment was led off by the Chairman, in a long and interesting address. He referred in a brief but graphic manner to the lectures of the past season, and

then spoke at some length of the Canadian section of the Crystal palace. "To that section," he said, "stunned by the excitement of the scene, the magnificence of the structure, and the surpassing wonders of its contents,—to which, as Lord Brougham has it, "not all the words of all the languages that tongues were ere attuned to speak" can render even feeble justice,—to that section I was always happy to retire: for it was a link which united me with this Institute, and one to which I was proud to point, as illustrative in part, of its usefulness and its energy; of the skill of its members; and of their patriotic efforts to employ that skill as a lever, with which to elevate their country in the eyes of the nations. There may be times when to refrain from active effort would be to commit a positive breach of duty, and such, I think, will be the opportunity to be given us by the Exhibition of the Provincial Agricultural Association, to be held in this City, in September next. I am enabled to state, authoritatively, that the parties engaged in that enterprise are determined to make the Toronto Exhibition, eclipse, in utility and excellence, every previous effort of this sort made within the Province; and it is reasonable that we should assist them zealously in their undertaking. It is a matter of high importance that the character of Toronto should be well sustained on that occasion; and if we would secure to ourselves that position of advancement and priority which capital cities are always expected to hold, (and which we ought not to forget is actively competed for by a very ambitious and not very distant little city,) we should apply ourselves diligently to the work of preparation. In advocating the claims of the Agricultural Association to your support, I do not feel that I am straying from my duty as President of your Institute. It is a part, and a very obstinate part of my faith, that no jealousy ought to divide the Agriculturist and the Mechanic: they are, or ought to be, parallel pursuits: their interests are to a great extent, mutual—if one languishes, the other is far from safe: if one succeeds both are, or ought to be the gainers. Patriotism is the common ground to both: the national good a bond of union. Let us, then, eschew petty differences, and pull harmoniously together; and so far from entertaining a partial and envious spirit, let the Mechanic and the Farmer travel side by side, rendering each to the other brotherly aid upon the way; that so the glorious path which our country is pursuing may be one of pleasantness and peace, the pride and the hope of all good citizens. He then said in reference to the Institute itself—You will, I am sure, be glad to hear that since 1847 the number of members has nearly doubled, being now 340. Large additions have been made during the past year to the library, which now contains 1544 books, selected with great care by the Committee with a view to the direction of the taste of the junior members into channels of sound and useful knowledge. The library alone ought to commend the Institute to an extended support, and I would indulge in the expression of a hope that some of my fair hearers who do not intend to devote their ives to Crotchet work and Berlin wool, will permit our Librarian to supply them with a few pat-

terns of the flowers and fruits of Literature. Our reading-room,—regularly supplied with the best periodicals and journals of the day, both English and American, to the number of 34,—continues to be well attended, and is the source of much pleasure and utility to our members. The drawing-class, too, has under most able supervision, been remarkably successful; indeed there is in every department most gratifying evidence of vitality and success. [Great applause.]

Mr. Pell rose to move the following resolution:

"That the members of the Toronto Mechanics' Institute are much indebted to the Lecturers of the past season, for the very valuable assistance which they have rendered the Institute, in disseminating useful information, and in arousing a taste for the acquisition of knowledge among its members and the public generally. That, in a spirit of warm appreciation, they herewith tender to those gentlemen their hearty and united thanks."

He expressed great pleasure in supporting the resolution because he thought they should be grateful to those gentlemen who had devoted their time and talents for their benefit. He had been much edified in listening to the various lectures during the past session, and he felt satisfied that no person who had attended, will rest contented without further examination into the subjects so ably handled. He regretted, however, that the attendance of the young mechanics of the city, had not been larger. It formerly was a common saying that the best mechanics were the most dissipated, the truth of that saying he hoped was passing away, and that in future the best workmen would be the most intelligent. He felt much gratification in the attendance of so many females (applause) during the year, and only regretted that there was not a better, building to which to invite them and the friends of the Institute.

Mr. THOMAS,—a member of the Council of the Institute seconded the resolution.

Mr. T. J. ROBERTSON, responded to it at some length. He differed from the resolution in so far—that he considered that instead of requiring thanks for their efforts, they should rather return thanks for the compliment paid them in being requested to lecture before so intelligent an audience as attended these lectures. There was so great an amount of intelligence exhibited in these audiences, that it became a difficult task for a lecturer to stand up and offer instruction to them. Mechanics Institutes had been the means of promoting general and scientific information, and they should consider it a high honor to share the labour in such a cause. Under these circumstances he felt deep gratitude to the compliment paid to him.

Dr. HOBBER also replied to the resolution, and suggested that in future sessions it might be advisable that two or three lecturers, similarly minded should unite together and deliver a series of lectures upon one subject in order that a more full elucidation of that subject might be given.

Rev. Professor LILLIE submitted the following resolution:—

"That the members of this Institute view with much interest and satisfaction the endeavors which are now being made to establish Mechanics' Institutes in many towns of this Province, and they desire to extend to their distant brother Mechanics their hearty good wishes for the healthy progress, and successful completion of their labours, trusting that the day is not far distant when the Institutes of this Province will be enabled to feel and know, both singly and collectively, that 'Union is Strength.'"

He engaged the President for the honourable position he occupied. He rejoiced, and he thought that every lover of his country would rejoice, at the efforts made to extend Mechanics Institutes through this young, rapidly growing, and very noble country, as the influence of these Institutes, when properly conducted, is pre-eminently good. He had felt, in listening to the lectures delivered, that their influence was peculiarly healthful. Of course it would be out of place to preach to a Mechanics' Institute; but he had felt it a privilege that a man who believes in the Bible, does not need to be afraid in addressing this Institute, lest he should happen to utter one word in its favour; or lest, in illustrating his subject, he should make use of any of its rich and glowing language (applause). It struck him as one of the great beauties of that beautiful lecture of Captain Lefroy, delivered at the commencement of the Session, that in the very beginning of that Lecture you saw the man. There was a distinct and broad recognition of the principles derived from Revelation. He congratulated all persons connected with the Institute upon that great privilege, not only for the sake of the Institute, but for the sake of the country. The Rev. gentleman then dilated at some length upon the benefits which this Institute was the means of conferring. He said these benefits were so numerous that it would occupy too much time to allude to them all. He, however, enumerated several; amongst which were, the honourable opportunity of enjoyment afforded, at a rate exceedingly light, whether as to the time or the expense involved—the moral benefits derived—the impulse they gave to the mind, and the mental habits they assisted in forming—the knowledge they communicated, and the pleasant and affectionate contact into which the several portions of the community were brought; and last, though not least, the opportunity which the lectures enjoy of improving themselves while they are preparing to address so intelligent an audience. It was in fact a full corroboration of the beautiful saying of the wise King—"In all labour there is profit."

Rev. Mr. ROOP seconded the motion, which was then put and carried.

Professor Hind, moved the next resolution, to the effect:—

"That the members of the Toronto Mechanics' Institute bear with much satisfaction, that the annual Fair of the Provincial Agricultural Association will be held in this city during the month of September next ensuing:—That they willingly assure the Local Committee appointed to the management of the Provincial Fair, of their hearty sympathy with an Association so well adapted to foster and develop the Agricultural and manufacturing industry of this country; and they trust that in all similar exhibitions of Canadian industry and Art, the Agriculturalists' and the Mechanics' Hall, may ever be found side by side."

He remarked very happily on the intimate relationship existing between agriculture and mechanics, and said it was as impossible for the anvil to exist without the plough, as it was that the plough could exist without the anvil. One fact he said he might mention—not perhaps generally known, that during the last ten years two hundred and ten patents had been taken out in Canada for improvements in various contrivances in implements, and out of the 210, not fewer than 49 were for improvements in agricultural implements, independently of others, perhaps 18 or 20 relating to the construction of mills.

Mr. Fenning in seconding the motion alluded to the fact, that agriculture had been a favorite science with men of accomplished tastes in all ages. An attention to husbandry was, he considered, a compliance with the designs of God himself, for the fact

that the earth produces is an intimation to cultivate it, and by making the most of his bounty, we not only estimate its value but manifest our gratitude for his paternal indulgence. It was the duty therefore of every one to encourage agricultural industry, by sympathizing with and aiding to the extent of his abilities those associations which are organized for its improvement. And it was cheering to think that in this country, both farmers and mechanics enjoy so many means of improvement in their respective sphere of action. The farmer has now his Common Schools, and a system of education, by means of which a good elementary education can be received, and in connection with them are circulating libraries, from which he can procure works upon every subject bearing upon his peculiar duties. He has too, his Mechanics' Institutes, which are multiplying throughout the land,—and he can procure works upon the more general topics with which he is called upon to become acquainted. And he has too, a Provincial University, with a chair filled by a gentleman very well qualified to teach him both the science and practice of Agriculture. Already the poetic prophecy, uttered some forty years ago, had been literally fulfilled.

On Erie's banks where tigers steal along,  
And the dread Indian chants his dismal song;  
Where human fiends on midnight errands walk—  
And bathe in brains the murderous tomahawk,  
There shall the flocks in thymy pastures stray,  
And shepherds dance at summer's opening day;  
Each wandering genius of the lonely glen,  
Shall start to view the glittering haunts of men,  
And silence watch on woodland heights around,  
The village curfew as it tolls profound.

PROFESSOR BUCKLAND rose to reply, and said that whatever embarrassment he might have anticipated in speaking to the resolution, had been wholly removed by the able and appropriate remarks of the President and those of the mover and seconder of the motion; a happy circumstance which left him but little to say. He would remind the audience, however, of a few facts. It would be well to bear in mind that Toronto had given birth to the Provincial Association, the first exhibition of which took place in this city in 1846. The Society was as yet but an infant; and like most young bantlings required no small amount of attention and proper nourishment in order to attain to a healthy and vigorous manhood. It had not yet completed the term of a septennial apprenticeship, but as exercise strengthened and matured the animal frame, so the annual peregrinations of the Association among the different cities and towns studding the shores of Ontario and the majestic St. Lawrence had imparted to it a strength of purpose and a character for utility, which he believed had already won for it the support and confidence of the country. The Government of Canada he must say, had for years manifested a fostering and patriotic care of institutions of this nature, and also of others having the laudable object of diffusing a taste for art, facilitating useful mechanical inventions and spreading abroad the blessings of knowledge and education. The resolution had the happy expression "that in all our great exhibitions of industry, may the Agriculturalists' and Mechanics' Halls be ever found side by side." Agriculture he thought owed more to mechanical science than to any other. Chemistry, about which so much had been said of late, and which no doubt was fitted and destined to advance the farmers' art, had as yet accomplished directly but little, it was highly valuable suggestively, and had sometimes thrown a clear and beautiful light on several of the more abstruse processes of the farm, which had been adopted by the cultivator on the simple but sure ground of observation and extended experience. The Pro-

essor referred eulogistically to similar institutions in each of the three sections of the mother country, whereby British Agriculture under free institutions had reached a point of excellence unparalleled in the history of our race, and argued that by the use of the same means, we on this western continent, in whose veins circulated he trusted no deteriorated blood, might with a reasonable certainty anticipate for ourselves and posterity, similar results. In relation to the connection of agriculture and the mechanic arts, he was disposed to regard the latter as preceding the former in origin, for even Adam in Paradise could not have cultivated a garden without some rude implement or other. At the Royal Agricultural Society's annual exhibitions in England, so increasingly great, has the number of implements and machines become of late years, that it has been found necessary in order to keep within a practicable space to admit only such as after minute inspection shall appear to have some decided originality in design or execution. The Agricultural Association of Upper Canada, was well known to occupy a field much wider than its name denotes;—horticulture, manufactures—and even the fine arts and ladies' work were all cheerfully embraced, the two latter had always proved the most attractive to a very large class of visitors. He would appeal to the ladies of Toronto for their invaluable sympathy and aid toward the next exhibition, and felt confident that the appeal would not be in vain. As large funds were necessary to sustain the association in an efficient manner the citizens will shortly be waited upon by the local committee for contributions, which it was earnestly to be wished would be commensurate with the wants of the occasion, and render the exhibition next September highly creditable to the metropolitan city of Upper Canada, and an honor to the country. He would not sit down without again reverting to the resolution which had called him up from his seat,—a resolution honorable to the industrious, intelligent, respectable body of men from whom it emanated, and for which in the name of the directors and of the local committee the Provincial Association he begged to tender his warmest and most grateful thanks.

Mr. G. P. RIMOUR, M.P.P., proposed the next resolution,

"That the thanks of the members of this Institute are especially due to the conductors of the Toronto Press, whose constancy in contributing their powerful aid to sustain the objects of the Institute, not only extends the sphere of its usefulness, but also arouses its members to individual exertion, and the public to an encouraging co-operation."

He was convinced that the resolution would be most cordially supported by the influential and respectable assemblage he had the honor to address. He had been given to understand that the Toronto press had upon all occasions where this Institute was concerned, most cheerfully extended its columns to make everything known in connection with it. He then passed a warm encomium on the President for his eloquent address, and concluded by thanking the council for the honor they had conferred upon him by inviting him to the entertainment.

Mr. J. HARRINGTON seconded the motion.

The Chairman intimated that some member of the press was expected to reply, but no one coming forward

Hon. Mr. BALDWIN rose, and said that silence was considered true eloquence, but whether the silence of the press might on this occasion be so considered he would leave the audience to determine. He then congratulated the President on the able address he

had delivered and concluded by moving a vote of thanks to the Chairman.

This was unanimously responded to, and the band struck up the National Anthem.

#### NORMAL AND MODEL SCHOOLS.

The Public Examination of the Normal School took place on Wednesday, from 10 o'clock to 4. The first part was an examination in Grammar and the principles of Teaching, conducted by Mr. Robertson, then an examination in the principles of Arithmetic, Algebra, Geometry, Mensuration, and Mechanics, conducted by Mr. Hind, followed by an examination in Hall's system of Vocal Music by Mr. Walsh. An intermission then took place, and the first part of the Afternoon examination was on Natural philosophy and Agricultural Chemistry, by Mr. Hind, and on History and Geography by Mr. Robertson. The examinations generally exhibited great proficiency in the various departments, a circumstance which must prove very gratifying to the country at large. At the close of the examination Dr. Ryerson rose to present the prizes given by His Excellency the Governor General, for the greatest proficiency in Agricultural Science. He said that the Normal School had suffered very much by the Government coming to Toronto, as they had lost the buildings which they occupied previous to that time, and as the new edifice was not yet completed he had not made much exertions to increase the number of students attending in the Normal School. The number of applications for the last Session was 93, out of these 13 were rejected, in consequence of not possessing the requisite qualifications. Eighty were consequently admitted, but that number had been considerably reduced. In former years they had had two terms of five months each; but it was thought advisable to change that system, and have instead one session of nine months. The experiment had not, however, been attended with success, as many students would have attended two different sessions, of five months who had not the means to attend nine months, and so long a session had had a hurtful effect upon the health of many of the students, inasmuch that only forty-one of the eighty had finished their course, upwards of twenty of the 39 had left in consequence of ill health, and others had done so for want of funds to remain so long out of employment; but with the determination to return as soon as possible. From these three causes, then, the number had been reduced from 80 to 41. They had therefore, determined to revert to the old plan. The Doctor then adverted to the progress which the pupils had made in Drawing, under the teaching of Mr. William Hind, (a younger brother of the Professor,) who had lately come out from England, and had brought with him the highest testimonials from the Manchester Branch of the Government School of Design. He referred the audience to the many specimens of Drawing which were displayed in the room. They had all been drawn from natural objects, and were not copied in the old method of teaching Drawing. The experiment made by this young gentleman had succeeded well, and the specimens exhibited were highly creditable. The specimens of writing exhibited displayed great improvement under the able teaching of Mr. S'ney. The highest number of marks for the Governor General's prize were S. P. Robins, of Northumberland, 266, 1st Prize. For 2nd Prize: Thos. McNaughton,

of Durham, 199; Alex. Lester, of Lanark, 197; Alexander Martin, of Lennox, 192; Catherine Johnston, of York, 189; Samuel Ross, of Simcoe, 182; William Tilly, of Simcoe, 173; Benjamin F. Fitch, of Norfolk, 163; Elijah Procutner, of Norfolk, 152; David Haldaday, of Renfrew, 138; E. R. Morden, of Hastings, 126. He was informed that this year the students have evinced much more excellency than in any former year, and he had every reason to believe that they would go forth highly qualified for their labours. The demand for students trained in the Normal School is greater than ever it has been; applications are constantly made for teachers, and salaries from £75 to £100 are readily offered. This consideration, he trusted, would, in future sessions, greatly increase the number of students at the Normal School. The public examinations which have taken place have so impressed the Government, that it is their intention to select a certain number of the students—the young men trained at the Normal School—as officers in the Custom Houses in the different parts of the country. This selection would be made upon the certificate from the Superintendent and authorities of this Institute. The examinations had so deeply impressed the Inspector General that, in these various departments throughout the Province, he considered they would be admirably qualified, from their facility in figures, for this purpose. It was, therefore, their determination to select from this source a certain number every year to fill these offices. These would not only be the best scholars, but would be the most correct in their habits. His Lordship, the Chief Justice, then presented the prizes to the two successful competitors, and regretted that His Excellency was not present himself to have done so, as they would have heard some excellent remarks. He congratulated the young men on their success, and tendered them some sound counsel. He spoke at some length, but generally in so low a tone as not to be distinctly followed. This finished the proceedings, and the company retired well pleased.

In addition to the foregoing report, from a city contemporary, we subjoin the questions to which candidates had to return written answers, in competing for His Excellency's prizes for Agricultural Chemistry. There were twelve competitors;—the first prize consisting of books of the value of £5, was won by Mr. S. P. Robins;—the second consisting of books of the value of £3, was awarded to Mr. T. McNaughten, both young men, and sons, we believe, of Canadian farmers. We have attended these examinations from the first, in the capacity of an examiner, but on no previous occasion do we remember the candidates evincing so correct and extensive a knowledge of the subjects brought before them; a circumstance alike creditable to themselves and teacher. Three hours were allowed for preparing their answers, but without any reference to books, or communication with each other.

#### EXAMINERS:

THE MASTERS OF THE NORMAL SCHOOL.

THE PROFESSOR OF CHEMISTRY IN THE UNIVERSITY.

THE PRESIDENT OF THE AGRICULTURAL SOCIETY OF THE COUNTY OF YORK.

THE FIRST VICE-PRESIDENT OF THE AGRICULTURAL SOCIETY OF THE COUNTY OF YORK.

THE SECRETARY TO THE AGRICULTURAL ASSOCIATION OF UPPER CANADA.

1. Trace the history of an annual plant from germination to maturity.
2. Describe the mode in which compounds rich in carbon may be made to accumulate in the soil, and show how they serve as food for cultivated crops.

3. Of what does the inorganic plant consist? In what forms does the inorganic food exist in the soil? Describe the artifices you would employ in order to furnish a constant supply to cultivated crops in a fit state for immediate assimilation.
4. In what way does the porosity of the soil affect cultivated vegetables?
5. Name the sources of the organic food of plants, and describe the artifices you would employ in order to maintain a proper supply in the soil.
6. Describe the effects of *Drainage*; also the mode in which you would proceed to drain your land.
7. Describe the most important proximate principles found in cultivated vegetables.
8. When crops are used as food for domesticated animals, what purposes do the different principles named in your answer to the last question serve?
9. Contrast the chemical functions of plants and animals.
10. To what points would you particularly direct attention in rearing stock?
11. How is animal heat supposed to be maintained? What effect will exposure to continued cold have upon the appropriation of the elements of food?
12. Describe the composition and physical characters of manures; distinguishing between vegetable, animal and mineral manures. Describe also the artifices you would adopt in order to preserve the properties of those which are liable to deterioration.

#### THE CANADIAN INSTITUTE.

The Conversation of this young and promising Society, for the encouragement of Literature, Science and Art, held in the Mechanics' Hall, in this City, on Saturday evening, April 3rd, was indeed quite a brilliant affair. The attendance was numerous, and comprised a large number of the literary, scientific and influential men of the city. The Hall was tastefully decorated with many valuable specimens of Art, in its several leading departments;—Painting, Sculpture, Carving, Engraving, Models of Steam Engines, Bridges, &c., &c. Captain Lefroy, R.A.F.R.S., occupied the chair, and gave a most interesting address on the progress of the Institute for the past year, during which a number of valuable papers had been read on various subjects. Several addresses were delivered in the course of the evening,—the subjects of them happily conceived and pleasingly treated. Professor Hind spoke on some of the characteristics of the climate of Western Canada, and was followed by Professor Croft on the manufacture and properties of Water Gas; Professor Cherriman succeeded even to the popularising of some recent investigations in relation to Mathematical Astronomy; and Rev. Dr. McCaul, President of the University, illustrated in a very lucid and happy manner, affording the audience both pleasure and instruction,—the method by which the Egyptian Hieroglyphics were deciphered. A detailed report of a meeting of this character does not belong to an Agricultural Journal; we are happy however, in having an opportunity of recording our columns the successful operations of a society, such as THE CANADIAN INSTITUTE, the existence of which is highly honorable to our City, and the influence of which cannot fail, if properly appreciated and supported, of raising the mental standard, and permanently advancing the material progress and social happiness of the country.

## PICKERING FAIR.

A correspondent has sent us the following notice of a market or fair, for the sale of live stock, and the implements of husbandry, that has been in successful operation in the township of Pickering for some time. We are glad to hear of so favourable a result, as we have long thought that periodical markets of this kind, established in suitable places in the well-settled districts of the country, would be attended with convenience and advantage to the public. Hereafter we may refer to the subject more at large. In the meantime, we request the reader's attention to our correspondent's remarks:—

The Fair which has been established in Pickering for the last two years, and held at Norwood, now GREENWOOD, is found to be of great benefit to the farmers in that, and the surrounding townships. The fair is held quarterly, and takes place upon the first *Wednesday in March, June, September, and December.*

The turn out stock has been very respectable at all the different fairs yet held, and a great many generally sold off. The attendance of the Toronto buyers has been numerous, and they have found stock in excellent condition for their purpose. Something may be judged of the beef made in this vicinity when we state that Mr. John Millar sold a young ox, last December fair, for the very respectable price of one hundred dollars. We understand that Mr. Dow, of Whithy, sold a pair last fair day, being Wednesday, the 3rd of March; we did not exactly hear the price, but we know for certain that Mr. D. was asking £50 for them, and that he had £45 bid some weeks before, when we saw the cattle at his own farm. Mr. Gould was the buyer of both of these excellent lots. This fair is also attended by those who sell ploughs, Harrows, Drills, Rakes, of various sorts, churns, pumps, and many other implements and utensils used in Agriculture and the dairy. The fair is now avowedly patronized by the Pickering Township Agricultural Society, and seems to be creating emulation amongst farmers, and improvements in stock, both in breeding and fattening—second, perhaps, only to the effects of that society.

CANADA: PAST, PRESENT, AND FUTURE. Toronto: Thomas Maclear, Yonge Street.

The 9th part of this valuable publication has been received, and as the work approaches completion, its useful character is well sustained. The present part completes the description of the several Counties, and enters upon a general review of the natural productions of the Province, and its advantages as a field for enterprise and settlement, compared with other colonies belonging to Great Britain. It is also accompanied by two neatly engraved maps, one of the County of Prince Edward; the other of the Counties of Lanark, Renfrew, Carleton, Leeds and Grenville.

MORTON'S CYCLOPEDIA OF AGRICULTURE.—Parts 15, 16, and 17, of this original and elaborate work, fully justify the high hopes and opinions we have previously expressed in relation to the earlier numbers. Each article is written by a distinguished person, *practically acquainted with his subject*; so that the work may be regarded as the result of an extensive experience in the various departments of Agriculture, and it has little or nothing in common even with the best compilations. We shall give our readers a few

specimens in succeeding numbers. It can be had in parts as published by Blakie & Son, of Glasgow, by their Agent, Mr. Thomas Maclear, of this City; and supplied to subscribers, in any part of Upper Canada, by his Travelling Agents.

PRIZE REPORTS.—At the recent meeting of the Board of Agriculture the first prize of £20 was awarded to the Report of the County of Wellington, prepared by John Harland Esq., of Guelph; the second of £15 to the Report of the County of Hastings, written, we understand, by William Hutton, Esq., of Belleville.

WANTED.—A young man recently from England; but who has had some experience in Canadian Farming, is desirous of obtaining a situation as Head man on a farm. Satisfactory testimonials as to ability, &c., will be given. Address A. B., at this office.

## TO CORRESPONDENTS.

A CONSTANT READER, *Chatham*—It is quite probable that Rape would succeed in very many instances, in your section, by sowing early in the fall, for spring feed. We know an extensive cow-keeper of this city, who has tried the experiment with success. The risks of failure would arise from the exposure of the plant during the severe weather of winter, in the absence of snow, and the alternate freezing and thawing in early spring. Rape is a hardier plant than the turnip, and will grow on inferior and heavy lands. We recommend you to try the experiment, which the only way of arriving at the absolute truth. We will shortly prepare an article on the culture of this plant.

T. W.—*Hemp* is undoubtedly worth attending to in Canada. We will endeavour at an early period to procure the information you require, and communicate it through the medium of our pages.

W. H. SOUTHAM.—We should be happy to publish Mr. Sotham's views on the Principles of Breeding, if treated in a candid and comprehensive spirit, and devoid of special pleading.

THE CATTLE CONTROVERSY.—Mr. Parson's reply to Mr. Sotham did not reach us in time for the present number.

W. A. W. ETOMCOKE.—We regret that your former communication got mislaid. *Downing on country houses* is a good book, and would probably meet your wishes fully. An American publication of a more recent date has been highly spoken of, entitled (if we remember correctly,) *Rural Houses*; and we see that Lewis F. Allen of Black Rock has just issued a work called, "*Rural Architecture*," being a complete description of farm-houses, cottages, out-buildings, &c." We do not know the prices of these publications, but believe them to be very moderate. The first mentioned contains only a portion of Downing's original work, expressly adapted to the wants of the rural population. Any respectable Canadian bookseller will procure them. *Paige's Threshing Machines* can be safely recommended; we do not know the price of the size you require; particulars can be readily obtained by applying to Mr. R. Wilson, the agent at Hamilton. There are several makers of thrashing machines of excellent quality and action in different parts of the Province.



## TO BREEDERS OF IMPROVED STOCK.

We have received from Lewis G. Morris, Esq., the following announcement of his next annual sale, which such of our sub-subscribers as are desirous of improving their stock could not do better than attend. Mr. Morris's sound judgment, great in lustry and enterprise in his particular department, coupled with his high standing for honorable dealing, fairly entitle him to the confidence and support of a discerning public.—EDITOR C. A.

LEWIS G. MORRIS'

*Third Annual Sale, by Auction, of improved Breeds of Domestic Animals, will take place at Mount Fordham, Westchester County, (11 miles from the Oily Hall, New York,) on Wednesday, June 9, 1852.—James M. Miller, Auctioneer.*

Application need not be made at private sale, as I decline in all cases, so as to make it an object for persons at a distance to attend. Sale positive to the highest bidder, without reserve.

Numbering about fifty head of horned stock, including a variety of ages and sex, consisting of pure bred short horns, Devons, and Ayleshires; Southdown buck lambs, and a very few ewes; Suffolk and Essex swine. Catalogues, with full pedigrees, &c., will be ready for delivery on the first of May—to be obtained from the subscriber, or at the offices of any of the principal Agricultural Journals or stores in the Union. This sale will offer the best opportunity to obtain very fine animals I ever have given, as I shall reduce my herd lower than ever before, contemplating a trip to Europe, to be absent a year, and shall not have another sale until 1854.

It will be seen by reference to the proceedings of our State Agricultural Society that I was the most successful exhibitor of domestic animals, at the late State Fair.

*It will also offer a new feature to American Breeders—one which works well in Europe; that is, letting the services of male animals; and will solicit propositions from such as see fit to try it. Conditions—The animal hired, to be at the risk of the owner, unless by some positive neglect or carelessness of the hirer; the expense of transportation to and from, to be borne jointly; the term of letting, to be one year or less, as parties agree; price to be adjusted by parties—to be paid in advance, when the bull is taken away; circumstances would vary the price; animal to be kept in accordance with instructions of owner, before taking him away.*

I offer on the foregoing conditions, three celebrated prize bulls, "Major," a Devon, nine years old; "Lamartine," short horn, four years old; "Lord Eryholme," short horn, three years old. Pedigrees will be given in catalogues.

At the time of my sale, (and I would not part with them before) I shall have secured 2 or 3 yearly sets of their progeny; and as I shall send out in August next a new importation of male animals, I shall not want the services of either of these next year. I would not sell them, as I wish to keep control of their propagated qualities hereafter.

I also have one imported buck, the prize winner at Rochester last fall, imported direct from the celebrated Jonas Webb; and also five yearling bucks, winners also, bred by me, from bucks and ewes imported direct from the above celebrated breeder; they will be let on the same conditions as the bulls, excepting that I will keep them until the party hiring wishes them, and they must be returned to me again on or about Christmas day. By this plan, the party hiring gets rid of the risk and trouble of keeping a buck the year round. All communications by mail must be prepaid, and I will prepay the answers.

L. G. MORRIS.

Mount Fordham, March, 1852.

## THE WEATHER, CROPS, AND MARKETS.

We have at length got through one of the longest, severest, and, in consequence of frequent winds and the absence of sun-shine, most unpleasant winters, that has occurred in Canada, for many years. Spring work has only just commenced and very little sowing has yet been done; the season, in fact, is nearly or quite a month later than that of last year. Cattle in many places are suffering much from the effects of the long snow and cold, and in some of the back settlements, we hear they are dying in great numbers for want of sufficient food. Many of their evils, however, might be prevented or at least mitigated, by a little fore-thought, either by increasing the amount of food, or by diminishing the number of animals to the proper proportion of the supply of fodder and by providing suitable shelter.—The past winter will read, it is to be hoped, a salutary lesson for the future, as regards these matters.

The accounts we get from different sections of the Province of the winter wheat are upon the whole, of an encouraging character. In some places the plant has suffered from exposure or snow drifts; but these evils we have reason to hope are but partial; and if this fine, warm weather should continue that has just commenced, the prospect of the wheat crop will present a very encouraging appearance. The copious and continued covering of snow, which we had during the late winter, has doubtless had a most beneficial influence on the wheat plant.—Rain is copiously falling to-day, and the temperature is indicative of Spring. The buds of fruit and forest trees are expanding, and we have noticed during the last twenty-four hours in several species such as the Elder, the Spruce and the Gooseberry, the development of leaves. With a warm mean temperature in connection with the present amount of moisture, the progress of vegetation will be astonishingly rapid.

The badness of the roads and coldness and lateness of the season have caused our markets to be bare of butter, eggs, &c., which have consequently ruled higher. Grain, however, continues depressed, with little doing. The recent accounts from England, contrary to general expectation, are of a discouraging nature, and the late advance in price has not been sustained. The Spring commenced in the United Kingdom with dry, cold winds and all farm operations were in a forward state. Wheat although somewhat backward was looking healthy, and a large breadth of potatoes had been early planted under the most favorable circumstances.

May 1st, 1852.

## The Canadian Agriculturist,

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N. B.—No advertisements inserted. Matters, however, that possess a general interest to agriculturists, will receive an Editorial Notice upon a personal or written application.