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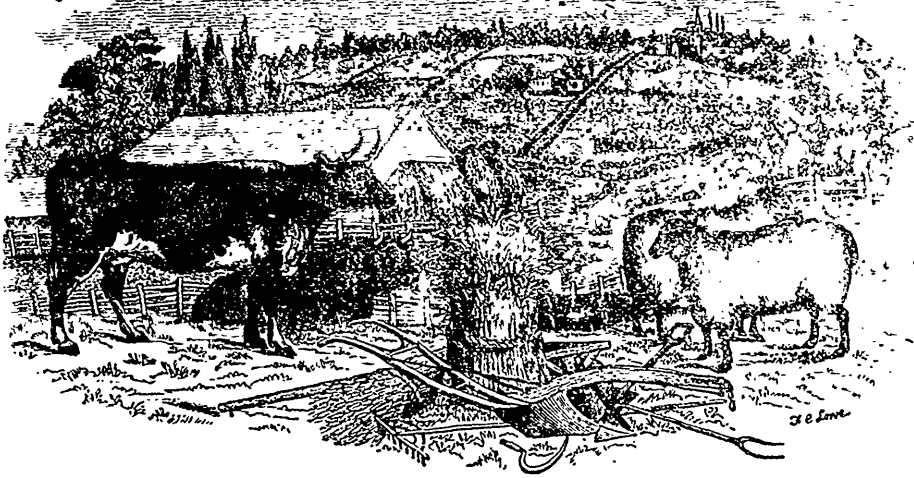
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CANADIAN AGRICULTURIST.



“The profit of the earth is for all; the King himself is served by the field.”—ECCLES. v. 9.

GEORGE BUCKLAND,
WILLIAM McDUGALL, }

{ EDITORS AND
PROPRIETORS.

VOL. II.

TORONTO, FEBRUARY, 1850.

No. 2.

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Published Monthly, at Toronto, C. W.

TERMS.

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INCREASE OF FERTILITY FROM SHADING THE SOIL.—Every observing person, says the *American Agriculturist*, must have noticed the unusual productiveness of soil which has been closely protected for a time. The earth under a building, the northerly side of a wall or large log, is itself a valuable manure. How is this result or change in the character of the soil produced? Will some of our scientific readers explain?

We know that such earth contains large quantities of nitrate of potash (saltpetre), and nitrate of ammonia, and it is frequently used for extracting saltpetre in the manufacture of gunpowder. Does it not contain other salts, absorbed from the atmosphere, and developed in the soil, in consequence of its peculiar position, all of which are highly favourable to the growth of vegetation? And how can this result be made of practical benefit to

agriculture? We have heard much of the beneficial effects of *Gurneyism* (covering meadows and pastures with straw, or refuse vegetables.) Has this been tried, and with what result in this country?

FEEDING QUALITIES OF PIGS.—A correspondent informs us, he bought, in September, two Berkshire pigs, six weeks old. He kept them in a warm pen, and gave them the slops from a small family, intending them for breeding. On looking at them, the last of winter, he found them too fat for breeding, and accordingly slaughtered them, at eight months old, when one was found to weigh 240 lbs., and the other 278 lbs., dressed.

Another says, a sow, mostly Berkshire, was butchered on the 9th of January last, in Conn., at precisely a year old, and dressed 553 lbs. A neighbour has just slaughtered two swine, at about fourteen months old, both kept together and fattened in the same pen. One dressed 478 lbs; the other 274 lbs. The lightest had eaten much more than the heaviest, and when the last had filled himself from the trough, the other, though eating faster than his chum, was always on hand for the remaining food; a very coarse brute, too. So much for breeding.—*American Agriculturist.*

PITHY HINTS.—Snuff on the necks and backs of calves and young cattle, will do more good than in the nose of any maiden lady or dandy batchelor; and brimstone, bought for the hogs, will not prove that the itch has got into the house. Cards, on the cattle, make them look as much better as children with their hair combed. A clean barn is a hint to the woman who takes care of the kitchen. Good milking stools save much washing in the house. A scraper on the door-step, saves brooms and dust.

HINTS IN SEASON.

Nothing can be more erroneous or prejudicial, than the prevalent idea, that in winter the farmer has little or nothing to do. It is true that in Canada, as in most countries of the temperate zone, his labours are neither so numerous nor pressing at this season of the year, as they are from the period of depositing the seed to the gathering in of the harvest. A certain amount of freedom is now enjoyed, from the anxious cares and labours incident to the field, and a portion of leisure is possessed, which every intelligent and enterprising farmer will gladly embrace, for the culture and discipline of his mind. There is reason to fear, that the mental energies of our farming population are allowed to partake too largely of that rest which is now enjoyed by the body; a circumstance that will, so long as it is permitted to exist, keep the farmers of this country from occupying that useful and honourable position in the social and political scale, to which they have otherwise a first and most indisputable claim. Books are now easily procurable on all subjects, and our own language is already rich in an agricultural literature, whose treasures every aspiring young farmer will gladly strive to make his own. Our first hint, then, to our readers, includes the duty and happiness of *improving the mind*, as well as the soil; for between the two, there is an intimate and indissoluble connection. The farmer must study to acquire the invaluable habit of thinking deeply and observing correctly, ere he can have the least chance of comprehending and advancing the principles of his important art. He must think, as well as work. Between a taste for books, a desire for social usefulness and distinction, a comprehension of the great forces which regulate the varied phenomena of nature; or, in other words, between the instruments of thought and physical research, and the guidance of the plough, we aver that there is no natural incompatibility. There is no occupation of life, in which the body and mind of man can be subjected to a salutary discipline, beyond that of the husbandman—the most essential and time-hallowed of all pursuits. What a pity it is that so many remain blind to these advantages!

At this season, the utmost attention should be paid to all kinds of live stock: the loss which the farmer sustains, from even a slight neglect of this matter, is certain to be considerable. It too frequently happens, that sufficient time is not given to the care of stock; and for this no excuse whatever can be urged in winter. All animals require, not only to be well sheltered from the pitiless cold and storms of these inclement regions, but they should be kept perfectly clean, by carefully removing their excrements, and bountifully supplying them with straw for bedding. Regularity in feeding is of primary importance, and a *mixture* of food will be found highly advantageous. Hay cut up with various kinds of straw, or corn stalks, and sprinkled occasionally with a little salt, will be better relished by animals, than when given separately; besides, the practice of cutting and mixing is far more economical. If farmers would

but attend properly to these matters, and tend and feed their cattle with humane attention and punctuality, they would be spared in the spring the too frequently distressing spectacle of half-starved, miserable-looking animals; and their pockets too would derive a proportionate benefit. A slight acquaintance, even, with the laws and principal facts of animal physiology—such as any intelligent young man might easily make, by devoting to that study a small portion of the long evenings of a single winter—would materially elevate his condition and qualifications as a farmer.

It is of the greatest importance, that every preparation should now be made, with reference to the approaching busy season of spring. Firewood should be procured sufficient for the wants of the year; rails split and got in readiness for repairing fences, immediately after the melting of the snow, and before the ground is in a condition for ploughing, when the pressing operations of cultivation will engross the whole time of the farmer. Manure may be taken to the more distant parts of the farm, when the weather will admit; it should be put into heaps, and well secured against the action of air and rain. Ploughs, harrows, and all other kinds of implements, should be carefully examined and repaired. In a word, everything should be got in readiness, and the plans of operation for the approaching active agricultural season well considered and determined. In this climate particularly, where the season for preparing the seed bed is so short, the appropriate work of winter ought to be thoroughly finished, before the auspicious season of spring arrives. To this end, both thought and energy are required.

Sugar making, on many farms in Canada, is a matter of economical importance; and now is the time to make the necessary preparations. Let buckets, boiling shed, and whatever else is required, be got in readiness; that as soon as the genial influence of the sun puts the vegetable juices into motion, the majestic maple, the beauty and monarch of our forests, may be made to contribute to the multifarious wants of man. As the climate of this country is evidently undergoing very considerable modification, the sugar season will consequently become more irregular, as compared with past experience; hence the desirableness of being duly prepared, that the business may be prosecuted with despatch, and not a day be lost. There are few farmers possessing any sort of a sugar-bush, but might manage to procure enough of that necessary article for their domestic use, and in favourable seasons have considerable to spare. By a little extraordinary attention and trouble in boiling and refining, this article, which is sometimes objected to on account of colour and impurity, may be made as clear and white as most of the better imported qualities. We have seen most excellent samples at the Provincial and other shows, which were as agreeable to the taste as they were attractive to the eye. To such as have little or no maple on their farms, we would strongly recommend the planting of that tree, for the twofold purpose of ornament and utility. It bears transplanting well; an operation, however, that should never be deferred till late in the spring, as

error too frequently committed in all kinds of planting. Maples set out by the road side, or in the fences of fields, are not only highly ornamental, and afford alike to man and beast both shade and shelter, but they yield a larger amount of sugar than the trees which are confined to the forest.

SPIRIT OF THE AGRICULTURAL PRESS.

REV. MR. HUXTABLE'S FARM.—We observe from English papers of recent date, that Sir Robert Peel had paid a visit to this clerical and renowned agriculturist. The secret of Mr. Huxtable's success lies in deep and perfectly clean culture, in the growth of large quantities of root crops, and in keeping great numbers of sheep and cattle. The animals are all tied up—including sheep—in warm and well ventilated stables, and the most perfect arrangements are made for saving the liquid and solid excrements. A steam-engine is made to do the principal work of the establishment; it threshes, winnows and sacks the grain, cuts the straw for the cattle, kiln-dries the corn, grinds it into meal, bruises the beans for the horses, and works a large bone-mill. The right honourable Baronet is said to have been highly gratified with his visit. Although the fact of Mr. Huxtable raising large crops and feeding a great number of animals on a soil of naturally poor quality, is, we believe, undeniable; yet, in fairness to our readers we must say that the *profitableness* of his system has of late been frequently called in question by several experienced and intelligent farmers. This remark will also apply to Mr. Mechi. We think that all amateur agriculturists, who would have their farm management regarded as a sort of model, are morally bound to exhibit a correct annual balance of their accounts, for the complete satisfaction of the public. Both Mr Huxtable and Mr. Mechi have of late been frequently called on to do this, but we have not heard of their compliance. High farming, or raising large crops at a great expenditure, is one thing; good farming, or raising large crops *with a profit*, is another. It is the latter only to which a man must look who farms for a living.

IMPORTATION OF CANADIAN HOPS INTO ENGLAND.—The English journals per last mail mention, as a novelty, the importation of several bales of hops, shipped from Montreal, and the growth of Canada. A considerable quantity had also been received from the United States, also from Belgium and Holland. The crop in England had proved very short, the duty amounting to only £80,000. As the home grower is subjected to an exorbitant duty of about one pound a cwt.; all foreign hops, including likewise those of colonial growth, are subject to an import duty of £2 5s. per cwt. In years like the present when, owing to the shortness of the crop, the price in England ranges from six to seven pounds a cwt., a moderate exportation may yield a profit, but on an average of years we doubt whether hops, from Canada or from the United States, can be sent to the British Market without a serious loss; that is, so long as the import duty exists.

IMMENSE FAT HOGS.—The *Amherstburg Courier* observes, that a fat hog was recently killed at that place, bred by Mr. Louis Bonise, that amounted to the enormous weight of 763lbs.; the animal being only two years old!

We likewise notice, in the *Long Point Advocate*, that Mr. J. B. Carpenter killed a hog weighing 710lbs! We should like to be informed of the breed of these animals, and the mode in which they were fattened. In many parts of the country too little attention is paid to these matters; the consequence is a coarse kind of animal of stunted growth.

Since writing the above we learn from our excellent contemporary the *Maine Farmer*, that a hog only 14 months old was recently slaughtered in Augusta, weighing 552lbs. The same paper states the weight of another pig only 10 months old at 410 lbs, which afforded 45lbs. of lard. By careful calculation the actual cost of the pork was a fraction short of four cents per pound.

FEEDING AND FATTENING SWINE.—The *Massachusetts Ploughman* contains a good practical article on this subject. Hogs should be fattened in the shortest possible time. A good appetite in the animal is the first requisite, and therefore everything should be done to promote it. Give him that which suits his palate best, and he will soon gain a good appetite; put molasses into his food, rather than he should not eat up all clean. Both molasses and sweet apples on many farms cost but little, and they are excellent to mix with pigs' neat. Feed full and with strict punctuality. Ashes containing charred coal, salt, weeds, rotten wood, peat, &c., thrown into the pen, help to quicken the appetite, and promote the health of the animal. The following case is given as an illustration:—

Cost of one pig, 50 lbs. live weight, at 4½ cents per lb, \$2.25. 6 Bushels meal fed, up to Sept. 5, at 75 cents, \$4.50; 13 do. fed to Dec. 5, when killed, at 78 cents, \$10.14; total cost, \$16.89. Weight of hog Dec. 6, 411lbs., deduct weight of live pig, 50lbs., net gain over live weight, 361lbs. 411 lbs., at 6½ cents per lb., market price, comes to \$26.71. Total cost of feeding, \$16.89. Net profit, \$9.82. No account is made of skim milk, which on most farms possesses no exchangeable value, and the refuse of many things are consumed by swine that would otherwise be totally wasted. Generally hogs do better together than one alone, provided there be room and accommodation sufficient. They seem to love society, and after a short acquaintance become peaceable and quiet, and attached to each other. The greatest cleanliness should be observed in their management.

LONDON MILK.—It is said that for the supply of the British Metropolis with this indispensable article, not less than 60,000 cows are required, which yield upwards of 100,000 gallons daily throughout the year! Adulteration is extensively practised in a variety of ways, and many of the animals are kept in dirty and ill-ventilated buildings.

AGRICULTURE IN CHINA.—The great secret of farming in China may be comprised in two words,

clean culture. A recent authority asserts that he had seen men imprisoned six months and upwards for allowing weeds to grow upon their land. If such a law existed in Canada how many of our farmers would manage to keep out of gaol after the commencement of spring? The Chinese cultivate entirely by the spade the slopes and tops of the highest hills, and for many square miles scarcely a weed is to be seen. The farmer of China ranks the highest in the community, and is on terms of perfect familiarity with the Emperor.

CANADIAN MUSTARD.—In the *Agriculturist* for 1849 we noticed an excellent quality of mustard, grown and manufactured by Messrs. Crawford & Inlach in the Niagara District, and we are glad to hear that the enterprising of these gentlemen has proved so successful. We learned the other day that Mr. Earles of Esquesing has erected a mustard manufactory, and has already produced a good article. He intends sowing 40 acres with mustard seed the approaching spring. There can be no doubt but the soil and climate of this country are well suited to this plant, and that Canada will soon produce enough, not only for domestic consumption, but may have considerable for exportation. There are several new kinds of produce that might be advantageously raised in this country, which we pointed out in our last volume. We saw a few days since some very good canary seed grown by Captain Shaw in the vicinity of Toronto. The true interests of Canada consist in developing the great resources of her extended and productive soil, and the application of her immense water power to purposes of manufactures; the two mutually aid each other.

REASONS FOR CUTTING FODDER FOR STOCK.—The practice of cutting hay, straw, &c., for animals, is found by all who have practised it to possess many advantages, economy being not the least. Much fodder is wasted by the common mode of giving it to stock. The *Boston Cultivator* thus sums up the matter:—

“1st. It can be measured more accurately, giving every one his portion in due season. 2nd, As horses and milch cows must have some grain, their whole mass is sweetened, while they receive their grain in the most proper manner. 4th, The water necessary to unite the particles of grain with the seed, softens the same, making easier mastication. Corn fodder, cut and mixed with shorts or meal, goes off well, nor do the long stalks bother in forking over the manure heap. Your horse, by being fed in this systematic way, with chopped feed, is fit for immediate service; you know what he has had, and what he can do. Great errors have been committed by feeding out hay and solid grain at random, when your horses are fondered by yourselves, although it has been charged upon the smith; while many of our favorites are made better and more palatable by the use of the chopping-knife.”

SET THE TIME AND KEEP IT.—Keep it punctually—don't vary a hair's breadth. When you say Monday, mean Monday. When you say Tuesday or Wednesday, mean Tuesday or Wednesday. When you say six o'clock, mean six o'clock. When you say twelve, mean twelve—not twelve and a-half, but twelve. Time is precious, infinitely; gold cannot purchase it. Better rob your neighbour of gold, or precious gems, than to rob him of a moment. Set the time and keep it!

THE UNIVERSITY.

AGRICULTURAL PROFESSORSHIP.

The University Bill of last session became law on the 1st of January, 1850, and the Commission has been appointed for remodelling the machinery, determining the number of chairs and professors, and settling the preliminary arrangements for the new and improved career of this provincial institution. The views entertained by the proprietor of this journal, on the justice and expediency of establishing a Chair of Agriculture in the chief seat of learning for the youth of this agricultural country, are well known to those who have read the *Agriculturist* for the last two years. Previous to the introduction of the University Bill by Mr. Baldwin, we had several conversations with that gentleman on this point, and we understood from himself that his mind was made up as to the propriety of making provision for the study of agricultural science, along with the other branches usually taught at a university. He did not think a chair of agriculture would, for some time, be of much service in a practical point of view, because it was not likely that, in the present state of the country, many young men who intended to till the soil only, would resort to the University for instruction in the science of their calling. But he felt the necessity of directing the attention of the youth of the country, seeking instruction at this institution, whatever their immediate object might be, to the principles of that art, which is and must continue to be the chief pursuit of the people of Canada. He mentioned, as one important result which he hoped to witness from a chair of agriculture in the University, the elevation of the farmer's profession, and an increased respect among other classes and among themselves for those who till the soil.

After so decided an expression of opinion from the Premier of Canada West, and concurring, as we did, in his views, we certainly expected to see some provision in the Bill, which he was about to submit to parliament, securing the object thus conceded to be of the first importance. No positive provision, however, appears in the act; and we understand it is not the intention of those who have the say in the matter, to recommend a chair of agriculture, or anything of the kind. We trust a less selfish influence than that which evidently led to this conclusion, will be brought to bear upon the visiting Commission, or whatever body has the right to dispose of this question.

Here is a great public school, supported by funds from the public lands, set apart for the purpose. Its ostensible object is to afford the means of instruction in the higher branches of learning, at a cheap rate, to the youth of every class in the country. The farmers of Canada as a class, if any one class is to be benefited more than others, are certainly entitled to consideration in the arrangements of this institution. It is from them exclusively that the funds are derived which keep it going. The sweat and labour of farmers have given the college lands whatever value they possess. They have made roads around them, cleared up the land adjoining, and in many cases suffered

great hardship from the vicinity of these unimproved "reserves." When leased and brought into cultivation, it is the farming class who pay the rent. Besides, this class constitutes at least 75 per cent. of the population of Western Canada; yet, if no provision be made for the encouragement and advancement of agricultural science out of the funds of this institution, the farmers as such will be excluded from its benefits.

There are, we believe, seven doctors employed in the University to instruct perhaps twice that number of students. We may be permitted to ask why the medical profession, already a monopoly, should engross six or seven professorships in the Provincial University, and the agriculturists be denied even one? We regard this as a monstrous abuse, and we hope it may soon be corrected. In England, on the Continent, in the United States, the promotion and development of agricultural science has been undertaken by the highest educational institutions. Yale College, one of the oldest and best of the American Colleges, established a chair of agriculture, which has been for some time worthily filled by Professor Norton. We observe that he has just received the prize of \$100, offered by the N. Y. State Society for the best elementary work on agriculture, for schools. Besides his lectures, which occupy but a small portion of his time, he analyzes soils, makes various experiments, lectures before agricultural societies, and in a thousand ways diffuses a knowledge of agricultural science, which is of more real practical benefit to the nation at large, than all the Greek and Latin taught by all the colleges in the country. He is enabled to spend his time in this way through his professorship. Other American colleges are following the example of Yale; and it is probable that in a very short time agricultural colleges or institutes, having a regular staff of professors, will be established in several of the states. With us, however, an almost exclusively agricultural people; our lands rapidly wearing out; the markets for our produce limited, and the advantages of protection in the English market no longer extended to us; new modes of cultivation, and new crops to cultivate, rendered necessary by change of climate, diseases of plants, exhaustion of soil, &c., those means which other countries, not pressed by so urgent a necessity, have thought it prudent to adopt, our wise men appear to consider futile and unnecessary.

It may be proper to observe, that these remarks are made by the assistant editor, and not by Mr. Buckland, who was induced to come to this country with the view of becoming a candidate for the Chair which he was told would be established, and who might therefore be suspected of feeling too much personal interest to speak upon the subject without bias.

We quote the following extracts from a speech delivered by a member of the N. Y. Senate at the conclusion of Professor Johnston's lectures in Albany a few days ago. These lectures were attended by the members of the legislature, as well as the farmers in the vicinity. The complimentary allusions to the lecturer, who, as most of our readers know, is professor of agricultural chemistry in

the University of Durham, England, and beyond all question the ablest writer of the present day on scientific agriculture, are in very good taste. But the reasons which the Senator gives for establishing an agricultural college, are the points to which we would particularly direct the reader's attention. We may not be able and willing to follow the example of our neighbours, by making so decided a movement at present, but surely the substitution of a professorship of agriculture for one of the expletive medical professorships in our richly endowed University, would be no great sacrifice on behalf of agricultural science.

"When we contemplate, said Mr. Baldwin, the elevated position which the learned professor occupies in his own country, standing, as he does, at the head of a profession which he so much adorns, when we consider how extended, broad and profitable to himself, as well as to others, is the field of his labours, and how great have been the sacrifices, pecuniary and otherwise, which he has made in accepting the invitation of our Society, to deliver its annual address last autumn, and in remaining here and in this vicinity since that time, to deliver the course of lectures which have just now closed, and to which we have listened with so much profit and delight; and especially, when we reflect upon the character of those lectures—the beautiful manner which they have opened to us the great volume of Nature, giving us a glance at its hidden mysteries and treasures—showing us the properties of the earth and the soils; the connection and relation between the earth and the vegetable kingdom, and the connection and relation between that kingdom and the animal creation, with the means of improving each; and, by the knowledge thus imparted, provoked an appetite for more, and leading us by that knowledge, from Nature up to Nature's God, and thereby making us not only better agriculturists, but better men, better citizens, and better christians; in view, sir, of these multiplied and high considerations, I am sure that I but express a common sentiment when I say that we sincerely thank our friend, the learned professor.

And, Mr. President, said Mr. B., if these lectures shall have, as we trust in Heaven they may, the effect of awakening our legislators to a proper sense of their duty in regard to this great interest, and which shall lead them fairly and fully to respond to the recommendations of his Excellency the Governor in his late message—to respond to the recommendations of the Agricultural Committee in their late and able report, on the subject of an Agricultural College and Experimental Farm—to respond fairly and fully to the united voice of their constituency, how deep and enduring will be that obligation on our gratitude.

By the lecture which has just now closed, you have learned that the farming interests in this State are in process of deterioration; that the average of all crops is certainly diminishing; the tables of the products, exhibited by the learned professor, show this; and he also shows us the means by which these products may be increased—by which we may be brought back to the products of a virgin soil.

The learned professor, in his lecture this evening, has also referred us to the products of the fertile soils of our new States, the prairies of the boundless West and which are brought into direct competition with the products of the soil of this State, and by which it appears most evident that we cannot much longer sustain ourselves against this powerful competition. What then, sir, is to be done? Why, sir, there is but one thing that can be done, and that is, to improve our system of agriculture, and by that system to increase the quantity as well as the quality of our agricultural products. The lights

of experience and of science will enable us to do this. But a knowledge of that experience and science must be acquired; and how can it be so well acquired as at an institution established for that purpose. * * *

Sir, continued Mr. B., the farmers of New York are not only ready for, but they demand this measure—the ground is already prepared—the loaf is already leavened—for eighteen years at least has it been at work—and what are its fruits? Look, sir, to the general interest awakened on this subject—look to the immense gatherings at your annual fairs—look to the improved condition of stock and agricultural implements; and above all, sir, to the increased circulation of agricultural papers and books, and you will agree with me that the time has come; that the harvest is ripe, and the sickles are ready, and only wait the bidding of the law-making power to commence the work. Yes, sir, the time *has* come, when the farmers of New York, in view of the almost overwhelming competition from the west, are called upon to look at home—to protect their own interests. And how, sir, I repeat, is that interest to be protected except by the introduction into it of the lights of experience and of science? We have this evening been taught by the learned professor, how one acre can be multiplied into four acres; or in other words, how one acre can, by an improved system of agriculture, be made to yield as much as under our present system four produce.

Now, sir, suppose a proposition were to be submitted to this legislature, by which the agricultural wealth of the State, for an outlay of a few thousand dollars, could be doubled, does any doubt that such proposition would at once be seized upon and adopted by that honourable body? Surely not; and yet for a comparatively small outlay, by adopting the system proposed, that wealth may not only be doubled, but quadrupled. And will not the legislature adopt it; will they not give us an institution where the farmer-boy may be educated—where he may receive, in reference to his calling, such an education as all other classes in this community receive in reference to theirs? In a word, will it longer allow this numerous and highly respectable class of our fellow citizens to be neglected—will the legislature longer allow this great interest, which lies at the foundation of all others, to suffer for the want of that aid which it, and the united voice of an impartial constituency, so loudly and imperiously demand? I trust not, sir, I trust that the legislature will not only give us an agricultural college and experimental farm, but that it will endow it with such ample funds, as to place it upon a strong and permanent basis—a basis which shall alike perpetuate throughout all time to come, the wisdom of this legislature, and the liberality of the State.

FREE TRADE AND BRITISH AGRICULTURE.

We learn from the last arrivals, that the question of Free Trade—or rather the expediency of imposing import duties on foreign grain—was exciting general attention throughout the agricultural districts. Meetings were being held not only in the counties, but in most of the market towns, and the general impression seemed to be decidedly in favour of moderate protection. The condition of all parties connected with the landed interest is represented as one of unprecedented and alarming depression, and little or no hope of improvement is entertained so long as the free-trade policy is persisted in.

On the other hand, Mr. Cobden has held a large meeting at Leeds, and has declared that he will

not allow the farmers one farthing's worth of protection again, and no doubt thinks he has set this much vexed question at rest forever. Mr. Cobden assigned as a reason why he had remained so long silent, the contempt which he felt towards his opponents, whom he represented as a very stupid, selfish, and inferior class of people. This clever agitator, we perceive, is also making a stir respecting the management of the Colonies, and Canada appears to have received a share of his attention. Much as promptness and decision are to be admired in the statesman, we yet think that Mr. Cobden's claims to that character would suffer no diminution, if he manifested a little less dogmatism, and evinced a more generous and impartial spirit towards other interests than those which he takes under his own special guardianship. Unhappily, these questions have always been, and it would appear still are, made class questions. In an empire so extensive as the British, abounding in interests so great and complicated, that system of legislation comes best recommended which embraces impartially every interest, and adapts itself under the guiding power of enlightened experience, rather than mere abstract theory, to the ever-changing wants and circumstances of practical life. It is a sad pity that statesmen cannot discuss a purely commercial question, like that of free trade, in that disinterested spirit, and with the calm deliberation, with which all honest seekers after truth approach the consideration of political economy, or the doctrines and principles of moral philosophy; for just in proportion as legislation is guided by high and comprehensive considerations, will a nation be united, contented and prosperous.

We observe that at many of the rent audits in different parts of the United Kingdom, reductions have been made on the last half-year's rent, varying from 10 to 25 per cent. Sir Robert Peel has addressed a circular to his numerous tenantry, intimating his desire to meet the times. The right honourable baronet thinks that the price of grain may be diminished at the present time—from causes apart from free importation—below what it may be fairly reckoned upon on an average of years to come. He accordingly proposes to his tenantry the postponement of any new arrangement till more experience is acquired of the effects of free trade in corn. In the meantime—while Sir Robert distinctly avows his opinion that any attempts to regain protection are utterly hopeless, and that grain, under the new system, in years of scarce harvests at home, can never be high, and that in ordinary years prices will rule low—he proposes devoting 25 per cent. of his rental, when all arrears are paid, to draining and otherwise improving his farms, without any charge upon the respective tenants. He further offers the loan of money, on moderate interest, to such tenants as are enterprising, with sufficient guarantee, either by a long lease or otherwise, that they shall reap the reward of their improvements. Now, while we say that all this is truly honourable to Sir Robert Peel, yet we regard it, in the altered state of things, as nothing more than his duty. Many others, no doubt, will follow the example; but it unfortu-

nately happens that a large proportion of the land-owners are not in a condition to do so. That much distress and ruin will result, for a time, from these fiscal changes, there is unhappily no room to doubt.

Since writing the above, we have learnt that the Canadian Reciprocity Bill has again been brought before the United States Legislature, and informally passed over. It appears not to have been thought even worthy of a discussion.* Of course our neighbours have a perfect right to legislate according to their own convictions of justice and duty. This free trade, however, "all on our side," places us Canadians in a very queer fix. We have little hope, while Cobden rules the ascendant, that the Imperial Parliament will do anything for our interest. We cannot hold out to our readers the expectation that colonial produce will receive any preference over foreign in the home market; and, however discouraging our farming prospects may be in Canada, we believe, after having had pretty ample opportunity of forming a correct judgment, that the condition of such of our farmers at home, whose misfortune it is to cultivate heavy and second-rate soils, with wheat at 40s. a quarter, is infinitely worse.

REPORT ON THE STATE OF AGRICULTURE IN THE OTTAWA DISTRICT.

(Concluded from p. 9.)
From C. P. Treadwell, Esq.

(No. 7.) *L'Original, Aug. 20, 1849.*

MY DEAR SIR,—As you have to a considerable extent shewn the practicability of the course adopted by the Roman commonwealth, that seven acres of ground would support a family; may I, without trespassing on your time, request that you will furnish me with a brief statement of your mode of farming, and also with an account of the kinds of crop you raise—your time of sowing and planting, and your opinion on the raising of garden seeds for this northern climate. Any information I may receive from you, I intend to transmit to the Provincial Agricultural Society. Please send me your communication by the 1st of September.

I am, my dear Sir,
Your most obedient servant,
CHAS. P. TREADWELL.

Mr. Samuel Stephens, West Hawkesbury.

(No. 7.) *Hawkesbury, Sept., 1849.*

DEAR SIR,—In reply to your letter of the 20th August, I beg to state, that in the year 1845, I raised on seven acres of land, 12 tons of hay, 15 bushels oats, 17½ bushels wheat, 20 bushels corn, 20 bushels potatoes, and 4 bushels onions, besides 400 bushels carrots, beets and turnips, mixed. The kinds of beet which I am in the habit of cultivating, are the white beet, the blood beet, and the Bassano beet; and I find that for feeding cattle they are superior to the Swedish turnip by one-

* Since this article was put in type information has reached us that the telegraphic account was premature, and that there is yet a chance for the bill to pass.

fourth. Milch cows that have been fed on beets, give rich and well-tasted milk, and the butter is plentiful, and equal in flavour to that of June. I am of opinion that beaus should be harvested before they are thoroughly ripe, and dried under cover. When saved in this way, the straw makes excellent feed for cows and sheep, and is as eagerly sought after as the best hay. I have never used any other manure than that from my barn yard, with the exception of a small quantity of gypsum, which I used in 1845, principally on the hay land. I have during the last three years planted out beets, carrots and turnips with great success. The seed which I have raised has been found to be fully equal to any imported from a foreign market; and I feel justified in saying that seed raised in the country is superior to any brought from a more southern one. This year, I have raised at the rate of 60 bushels of the small eight-rowed corn to an acre. This corn is equally productive; and one decided advantage it has over all others is, its ripening two weeks earlier. This year I planted my corn on the 20th of May, and harvested it on the 1st and 3rd September, it being then sufficiently ripe. My beets, notwithstanding the dry weather, will yield from 800 to 1000 bushels per acre. My hay is a light crop this season. Oats are short in the straw, but the grain is good. I had no wheat sown this year.

I am, Sir, your obedient servant,
SAMUEL STEVENS.

C. P. Treadwell, Esq.

From Mr. Colin Cameron.

(No. 8.) *East Hawkesbury, Sept., 1849.*

DEAR SIR,—My experience in agriculture being very limited, I am unable to say much on the subject. I will, however, endeavour to answer your questions to the best of my ability. The kinds of grain which I have cultivated with the greatest advantage, are wheat and Indian corn. Within the last three years I have harvested on an average 50 bushels of corn and 18 bushels of wheat per acre. My time of sowing wheat is as soon as the frost has left the ground; sowing it before the frost is properly out, causes smut. The quantity of seed I sow on an acre, is 1½ bushels. Corn I plant about the 12th of May, at the rate of eight quarts to the acre. The only manure I use is common barn manure; but one of my neighbours has tried leached ashes on light land, and has found the crop to succeed remarkably well. This year I consider hay a failure, owing to the drought, but generally 2½ tons is the quantity I cut on an acre. My oats commonly produce 50 bushels to the acre. Beans, carrots and beets are what I consider most neglected. Working cattle fed on turnips are subject to disease. I would, however, recommend turnips for stable feeding. Ploughing should not be shallower than five inches; but in this every farmer must be guided by his own experience, as well as in the selection of what kinds of grain he should cultivate.

I am, my dear Sir,
Your most obedient servant,
COLIN CAMERON.

C. P. Treadwell, Esq., P. A. S. O. D.

From Mr. James Cross, Caledonia.

(No. 9.) *Caledonia, Sept., 1849.*
C. P. Treadwell, Esq.:

Sir,—As our committee have decided on not sending delegates to represent our Society at Kingston, I send you a statement—in accordance with the wish expressed in your circular—of my manner of farming.

I carry on my farms on the rotation system. I sow all kinds of grain, varying the crops according to the seasons, as our seasons have been very changeable, but not sowing two crops of the same kind one year after another on the same piece of land. I plough green sward either in the fall or in the spring. I sow oats, peas, or peas and oats mixed, as soon as the ground is in proper order for seed. I plough the same land again in the fall, and again in the spring, and plant potatoes, corn or turnips for the second crop. I sow spring wheat with grass seed for the third crop. I find this system to be the most remunerative for growing hay and raising stock to make manure, to enable me to carry on my farming operations with advantage. I sow three-months wheat (white chaff) in April, and Black Sea wheat in May. I plant corn and potatoes from 10th to 20th May—ground as well manured as possible; and as one of the experts of the district agricultural society, I find, on careful examination of the different farms, that those farmers who pursue this system have the fewest weeds and the best crops.

I am, Sir, your most obedient,
JAMES CROSS.

From Mr. John Hunter.

(No. 10.) *Hawkesbury West, Sept., 1849.*
Charles P. Treadwell, Esq.:

Sir,—With respect to your agricultural enquiries, I beg to reply to them in accordance with my experience and knowledge.

In the first place, oats are cultivated with the greatest success on my farm. I am of opinion that for spring crops, neither oats nor any other kind of grain should be sown, till the trees have begun to show signs of vegetation. The quantity of seed I put on an acre is as follows:—Oats, 3 bushels; wheat, 1½ bushels; barley, 2 bushels; potatoes, 13 bushels; peas, 2½ bushels; hayseed, 12 quarts. The kind of manure I use is barnyard manure; but I prefer black muck to any I have tried, on account of its durability and aptness to produce good crops. Hay this season is light, but the quantity I generally cut averages yearly about 12 tons. That which I consider most neglected is hay; for if the meadows were covered with manure or muck, they would yield double the quantity, and of better quality than they now do in their present neglected state. I think that if some scientific agriculturist would come forward and deliver before each agricultural society, a lecture on the utility of good husbandry; or if agricultural schools could be established in every district, it would confer an advantage of no small importance to the farming community.

I have the honour to be, Sir,
Your most obedient,
JOHN HUNTER.

From Mr. Peter Hickey.

(No. 11.) *Hawkesbury, Sept., 1849.*
C. P. Treadwell, Esq.:

Sir,—In answer to your circular, I have to inform you that I have raised 30 bushels of wheat per acre, sown on the 1st of May; 50 bushels oats per acre, sown on the 20th May; from 40 to 50 bushels corn, planted on the 10th May; 450 bushels potatoes, planted 20th May; hay, 2½ tons per acre. As to manure, I have used none but that made in the farm yard; and with good ploughing and hoeing, it is certain to produce a good crop.

I am, dear Sir,
Your most obedient servant,
PETER HICKEY.

From Mr. George Hutchinson.

(No. 12.) *Hawkesbury, Sept., 1849.*

DEAR SIR,—In reply to the inquiries in your circular of the 20th August, I would beg to state, that the only kinds of grain I am in the habit of raising, are wheat, oats, and Indian corn. The proper time for sowing Black Sea wheat is, in my opinion, about the 21st of May, and when the land is of a heavy soil, richly manured, and deep and well ploughed, we can get 30 bushels to the acre. The quantity of seed will depend on the nature and quality of the soil, a rich and heavy soil requiring less seed than a poor and light one. In general, it may be stated at from 3 pecks to one bushel and a half per acre. I commonly begin to plant my corn about the 15th of May; and when the land is in what I consider a good state, I can raise a hundred bushels to the acre. Oats, although a light crop this season, generally remunerate me well. I always sow three bushels of good clean seed to the acre; and where the ground is in good order and well manured, I can get from 70 to 100 bushels per acre. I can say little in favour of root crops this year, although I have had great success in other years, having raised at the rate of 1200 bushels of carrots per acre, and 1 bushel potatoes to each single rod of a common drill throughout a large field. The manure that I use is from the horse and cow stables, and my mode of applying it is this:—About the end of March I take the manure to the fields where it is to be used, and place it in heaps. As soon as the snow has disappeared, I scatter it over the ground, and when the land is fit, I plough it down. I then plant or sow my grain on the top, and harrow well. In a short time the roots find their way down. I think, Sir, if we were to cultivate less land, and do it better, we would procure greater crops, and of better quality.

In conclusion, Mr. President, permit me to return you my sincere thanks, as a zealous advocate and liberal supporter of one of the most noble and honourable callings of the human race.

I am, dear Sir,
Your obedient servant,
GEORGE HUTCHINSON.

C. P. Treadwell, Esq.

In closing the Report of the Ottawa District Agricultural Society, I beg to make a few remarks

on the subject. Our district has been well informed as to the operations of the Provincial Agricultural Society; a considerable number of its bills having been sent to me, and distributed among the committee of the Society and the District Councillors. In remarking on the different letters I have received in answer to nearly forty circulars, more answers were received than I expected, and I hope they contain such information as will repay their perusal. The circulars have elicited in our own district a spirit of enquiry and investigation that will do much good. Should you think them worthy of notice, you are at liberty to send them to the *Canadian Agriculturist* for publication, *pro bono publico*. There may be some sentiments expressed, not fully sanctioned by the Society, as well as some reports that appear contradictory; but the experience and views of all of them, are, I consider, sufficiently entitled to calm consideration. Mr. Higginson's letter, on the establishment of a *Model Farm* in every district, I conceive to be a matter of vital importance, and I hope the Provincial Association will lend its influence to effect this great object. Dr. Everett has shown that he is thoroughly acquainted with the theory of the science of farming. He is also acquainted with its practical operations, as he has the best dairy of its extent in the district, and is demonstrating that the growing of beets, turnips and beans, can be carried on with profit to the farmer. John Pettec, Esq., is a farmer of experience. His letter I have read with much satisfaction, and I think it may convey useful information to others. Elijah Brown, Esq., is one of our most extensive farmers. He has a great deal of practical experience, and has been very successful in his operations. Mr. Pierre Leduc is a French Canadian from Lower Canada, who settled here about thirty-five years ago. From the peculiarity of his land, he has, I believe, been the most extensive wheat grower in our district. He is a man of sound judgment and practical experience. He understands the nature of manure, the advantage of using the Scotch plough, and the economy of the labour-saving threshing mill. Mr. Pierré Dault, another French Canadian, is a man who has made himself wealthy by industry and economy, and has clearly shown that the low land between L'Original and the Springs is capable of producing first-rate crops. Mr. Josiah Marston's letter on horticulture, I feel proud of on his own account, and on account of the district. I am confident, if his life is spared, that he will become one of the first horticulturists in Canada.

Mr. Samuel Stevens has clearly shown that seven acres of land, well cultivated, will support a family.

Mr. Colin Cameron is a good practical farmer; his remarks are worthy of consideration, and his objection to feeding working oxen on turnips should be investigated. Mr. James Cross is one of our most extensive farmers, and his ideas on the rotation system of crops, I am confident are correct, and should be followed. Mr. John Hunter, and Mr. Peter Hickey, are sound practical farmers, whose opinions are well grounded and may be depended on. Mr. George Hutchinson's statements, although large, yet, from knowing him

many years, I feel confident are correct. His great crops I consider to be owing to a combination of favourable circumstances. His land is highly improved; his ploughs and sows in the very best time, and his success should be an inducement to every other farmer to do the like.

The Report of the Experts on crops this year is short, but I think it shows that the agriculture of our district is improving.

Manufactories in our district are beginning to be appreciated. The Hawkesbury Mills, belonging to the family of the late Hon. George Hamilton, have been long and well known to the public. This establishment manufactures annually half a million of pine deals, employs 300 men, and circulates yearly a large amount of money for labour and farm produce. There are several other smaller establishments for manufacturing deals. The Hon. Peter McGill has an extensive establishment, consisting of a flouring mill for manufacturing for exportation, as well as for country work; also an oat meal mill, and an oil-cloth manufactory, &c. At the thriving village of Vankleek Hill, Messrs. Wills and Cleaveland have an extensive pearl ashery, at which they make 600 barrels of pearl-ash per year. They have also a manufactory for salzeratus, in which they make 2750 boxes of that article, of 100lbs. each, of a superior quality. Mr. Wiltzie Manning has a plough manufactory and foundry, where he makes 200 ploughs. He has lately introduced a new model for the cast iron plough, which bids fair to be a great improvement. Mr. William Dixon, of Longueil, makes as good ploughs as any imported from Scotland. There are many other smaller manufactories that might be mentioned, but it would extend this report too much. L'Original at this time has as good a grammar school as there is in the province. It is under the management of Mr. William A. Ross, a teacher whose attainments are of a superior order. The school house is in a healthy situation. Vankleek Hill has also an excellent grammar school, under the direction of Mr. Alexander McNaughton.

In conclusion, I would merely observe that last winter I addressed our members for the district, Major Johnson and Mr. Lyons, and requested them to attach to any agricultural bill before the House, a grant of £50, for each district agricultural society in Upper Canada, for the purpose of purchasing agricultural implements of the most approved kinds, such as ploughs, harrows, drill harrows, double mould-board ploughs, rakes, hoes, spades, shovels, &c. &c., as models to be placed in each Court-house, that every juror and party attending court might see, and bring his mechanic to make the like for himself. I also at the same time asked for a further grant of £50, to purchase an agricultural library, to be attached to every district society. But should Mr. Higginson's plan of a *Model Farm* be carried, these last suggestions will be unnecessary.

All which is most respectfully submitted.

CHAS. P. TREADWELL,
President O. D. Agricultural Society,
 L'Original, Ottawa District, Sept. 14, 1849.
 To Henry Ruttan, Esq.,
President Agricultural Association, U. C.

THE STATE OF AGRICULTURE IN EUROPE.

An Address delivered before the New York State Agricultural Society, at Syracuse, Sept. 13, 1849, by James F. W. Johnston, F. R. S., S. L. & E.

MR. CHAIRMAN AND GENTLEMEN:—One of the first lessons a European has to learn after he has landed on the shores of this new world, is to dispossess his mind of all those associations, rich and rare, with which the history of past ages has connected the names of remarkable places. In passing through New England it was my fortune to stop at towns and villages called by names long familiar to my ears—the sound of which seemed to say, “in a few hours or minutes you will arrive again at your own home and hearth.”

But in travelling from Albany to this place, I have met with people fresh from Troy—I have come through Africa and Rome—and from the lips of children have heard of other mighty cities which our earliest European lessons clothe in the hoar of remote antiquity, and illuminate with the glory of immortal deeds. In the desire thus to connect your new towns with the recollection of famous actions, I would read an admiration of the actions themselves, and secret aspirations after similar renown.

In the old world, I have just left, there exists an ancient Syracuse, rich in all those bounties of heaven, which especially favor the husbandman—a genial and sunny climate—clear, blue skies, balmy air and never falling dews—a soil fertile in oil and wine, and abundant in corn, almost beyond belief.

Thousands of years ago, when no Saxon or Celtic foot, not even that of the roving Northmen, had yet trodden the American shores, this ancient Syracuse was the capital of a kingdom of six millions of souls; and though it had so many mouths of its own to fill, the produce of its teeming soil left still a large surplus for exportation. An energetic people, comparatively free—unbroken in spirit by frequent wars, by foreign conquerors, and by the degradation and oppression which afterwards beset their domestic hearths—availed themselves to the utmost of the bounties of nature, and by patient industry made their country the “*horreum Romanorum*,” and in the language of Livy, “*populo Romano, pace ac bello fidissimum annonæ subsidium*.” Now cast down and degraded, the successors—scarcely to be called the sons of the same people—languish in comparative indolence; and though the bounties of nature are ever fresh and new as in its palmiest days, there are few countries in which agriculture and the arts of life are in a more debased condition than in modern Sicily.

But time, which has wrought this melancholy change, has caused others more cheering to happen too. It may be, that amid the ruins of old Syracuse its ancient fires still live, on some future day to be lighted up anew, and more successfully, into a steady and enduring flame, which the foot of despotism shall never again be able to trample out. But however this be, it is gratifying to me to see—as it must be to you—that in a new country, peopled by a new race, a younger Syracuse has sprung up, emulous of the worth and glory of the ancient—nourished by free institutions—carried forward by the untiring energy of Teutonic blood—above all, emulous of the agricultural renown of the Syracuse of distant times, and by the application of more mind and knowledge, to a less exuberant soil in a less favored climate, bent on creating a new granary of the nations, an unfailling western store house to a great and growing people.

It is a happy omen to me, coming among you for the first time, that I should meet with you to discourse upon scientific agriculture, in a city which recalls the vast fertility of the plains and slopes of Sicily—may the modern like the ancient, descend to after times, associated

with ideas of rich cultivation and prolific fields of corn!—It is not without anxiety, as you will suppose, that I appear for the first time before a large trans-atlantic audience. But though you are American born, gentlemen, your faces are familiar to me. They tell me you have Scotch and English hearts, and I believe I may throw myself confidently on your kind indulgence.

I cannot presume to address you on the general importance of agriculture; its fundamental connection with the welfare and power of every state; the estimation in which it has been held in all ages and among every cultivated people; the natural proneness of man to till the soil; the pleasure with which the most talented men, and the highest in station, have always looked forward to the time when leaving business and profession and the cares of office to younger men, the small farm should alone employ their quiet leisure; nor upon the greater attention and respect which this art and its cultivators now every where demand, and are every where receiving. These topics are familiar to you, and you are too rich in native talent to require a stranger to address you on generalities like these.

Nor does my very recent arrival in the United States, entitle me as yet to speak from my own observation upon the existing condition of agriculture on this side of the Atlantic. I have selected, therefore, as the subject of my present address, the existing condition of Agriculture in Europe.

There are two very different ways in which I might bring this subject before you. I might illustrate in the abstract, the amount of practical and scientific knowledge which Europe possesses in regard to each of the departments of rural economy, which its climate enables it to prosecute. Taking the methods of the best practical men, and adding to these the knowledge of those most skilful in theory, I might present to you a picture every detail of which was true, but the effect of which as a whole, would be to convey to you a most exaggerated idea of the actual condition of the art—even in Great Britain, where both in theory and practice it is supposed to be best understood, and most skilfully carried into operation. Or I might take you from country to country, and show you as we passed hastily along, the character of its rural population, the excellences or defects of its cultural practices, the condition of its arable soils, the qualities and treatment of its cattle, and generally what is doing by governments and people in each country for the improvement of the rural arts. I should thus set before you a series of pictures, true, not only in detail, but in their general effects upon your minds, though not partaking of those broad and comprehensive views, which a sketch of European Agriculture, as one whole, would be expected to present.

I propose to some extent, to follow both methods. After a brief outline of the state of practical agriculture in the leading countries of Europe, derived chiefly from my own observations, I shall endeavor to give you an idea of the position in which agriculture as an art now stands—of what is doing to advance it—and especially of the aids which science is now lending to the practical economies of rural life.

SWEDEN.—Commencing in the north of Europe with the Scandinavian peninsula, I would remark, that in Sweden—especially since the accession of the late king, Carl Johan, better known by the name of Bernadotte—much attention has been paid to agriculture. The improvement and increase of the flocks of sheep for the growth of wool, the introduction of better breeds of stock, of newer implements, and of an improved rotation of crops—have successively received much attention; but of late years the great force of the people has been expended on the drainage of the lakes and marshes with which the country is so plentifully studded over. The agricultural societies of the provinces, in conjunction

with the Academy of Agriculture in Stockholm, have devoted much pains to what may be called the arterial drainage of their several districts; and though the more refined method of improvement, known in Great Britain by the name of *thorough drainage*, has not as yet been any where introduced, it is only just to the energy of Sweden to say that no European people, in proportion to its natural resources, has done more during the last twenty years in the reclamation of improveable land from the dominion of overflowing water.

Further advances also are secured by the translation, especially from the English, of the best works on scientific agriculture, under the auspices of the Academy of Agriculture, and by the establishment of agricultural schools and model farms, one of which each province is expected in a few years to possess. Thus in Sweden, as in all other countries, the period of improvement by mechanical means will be succeeded by one of improvement by chemical means—the nature and economical application of which latter means, books and schools will have taught, when the time for more generally applying them shall have come.

RUSSIA.—In Russia, agriculture as a whole is in a very imperfect condition. Here and there, especially in the neighborhood of large towns like Moscow and St. Petersburg, laboriously and skilfully cultivated fields may be seen, while herds of improved Swiss and short horned cattle are carefully reared on the domains of the rich nobility. The Emperor also, who knows well the importance of this art to the strength and prosperity of his dominions, sets an example to his subjects by the efforts he makes to introduce a better system of culture among the serfs on the Imperial estates, by the establishment of schools for the instruction of farmers in art and experimental science, and by the maintenance of model farms upon the appanages of the crown. But Russia, nevertheless, is half a wilderness. Millions of acres of perpetual forest cover rich soils which there are no hands to till. The value of an estate is measured not by the number of acres it contains, but by the number of souls which live upon, cultivate, and are sold along with it. As in the first clearing of a North American wilderness, where land is comparatively worthless, the soil is cropped till it is exhausted, and then new land is subjected to the plough and exhausted in its turn. In no country of the world, with the exception of Northern America, is there so vast a field for the useful emigration of agricultural settlers, as in the mighty Empire of Russia. But language, and religion and political institutions, oppose barriers which the Saxon, and I may say the Teutonic races generally, feel themselves unable to overcome.*

GERMANY.—In order to obtain a correct opinion of the agriculture of a country, a man must not only view the country with his own eyes, but his eyes must be taught both what to look for, and how to look for it. The reports of travellers who are unskilful in rural matters—the educational institutions of the country itself—and even its agricultural statistics, are all unsafe guides where a really correct appreciation is desired of its true position in reference to this important branch of social economy. This observation is illustrated by the actual condition of the several branches of rural economy when compared with the state of agricultural instruction, and with the attention which has been paid to statistics in the different Kingdoms of Germany, and in France.

SAXONY.—In Saxony, a country greatly favored by nature in the character of its soils, the chief attention of the great landholders and of the government, has been long directed to the improvement of the breed of sheep, from which the celebrated Saxon wool is obtained. This Kingdom exhibits generally a very different appearance

from the neighboring country of Bavaria. In passing from the latter kingdom to the former, you "seem to pass," says Mr. Royer, "from the desert into the land of promise." "Two-thirds of the rich proprietors in Saxony," he observes, "cultivate their own properties, and have established an order, neatness, and method, which, though far from agricultural perfection, you seek for in vain in France."

WURTEMBERG.—In the Kingdom of Wurtemberg, where the instruction at the agricultural school of Hohenheim and elsewhere, is better organized, and at this moment more famed, than in any other part of Germany, and where, in fact, the art of culture as a whole is the farthest advanced, the general cultivation is described by Mr. Royer as being melancholy, and, at a distance from the capital, very different from what the eulogies of authors had led him to suppose.

BAVARIA.—In Bavaria we find an imposing array of institutions and means of instruction, specially provided for the rural community, which are fitted to impress the superficial observer with a high idea of its agricultural condition. As in Wurtemberg, there is a central school of agriculture. There are also Chairs of Rural Economy in the Universities, and more than twenty Chairs of Agriculture in the Seminaries and polytechnic schools of the provinces, besides a general Agricultural Society, counting more than 8,000 members. These facts convey the impression of much zeal on the part of the government; much interest in agriculture on the part of the people; and an advanced state of the art of culture in the kingdom generally. But "the miserable aspect of Bavarian Agriculture would lead one to suppose that all these means of encouragement are very inefficacious."

[Royer]

The schools are badly organized or conducted. The great land-owners are indifferent on the subject of agricultural improvement, while the miserably defective condition of the roads and other means of internal communication indicate, that even the government which has organized all the formal apparatus we have mentioned, is not itself alive to the most fundamental element of agricultural progress.

PRUSSIA cannot boast either of its practical agriculture, or of its system of agricultural instruction. It is a proof of how very little has in past ages been done in the way of teaching the rural population the principles of the art of culture, that Prussia should so long have derived an undeserved celebrity from the existence of a private agricultural school at Mogelin, established in 1806, and conducted till his death in 1819, by the distinguished Von Thaer. After his death the school he had founded was made a Royal Academy, and is still in existence. It contains at present only twenty pupils; and even in Von Thaer's time it never contained more than thirty-four. In the much praised primary schools of Prussia, a little instruction in gardening is the only teaching which bears an immediate relation to the future occupations of the rural population.

In the nature of its soils, indeed, which are sandy, light enough to be blown by the winds, and apparently almost sterile, Prussia has much to contend with. This is especially the case in its more ancient and central Dutchies, Westphalia and the Rhenish provinces are naturally richer, and are also more advanced and better cultivated.

Besides, until the revolution of the past year, the burdens or servitudes upon land, of a feudal kind—and of which in the New World you have no examples, except a few of a milder form in the seignories of Lower Canada—were so onerous and so unequally distributed, as greatly to retard the development of its agricultural capabilities. The state of the roads and other means of communication also, as in Bavaria, and the scarcity of large towns, have concurred with other causes, in retaining the agriculture of Prussia in a very backward condition.

* For information on the state of agriculture in Russia, see also a paper by the Hon. Mr. Stocum, in the transactions of the N. Y. State Agricultural Society, for 1848, p. 638.

HOLLAND.—If from the uplands of Germany we descend to the lowlands, and especially to that country which includes the islands at the mouths of the Rhine and the Scheldt, and the low country stretching northward to the Zuyder Zee and the Dollart, we shall find reason to stay our steps and to consider calmly the cause, and purpose, and extent of the wonderful system of canals, and embankments which the kingdom of Holland presents.

In a sketch of European agriculture, indeed, Holland is deserving of distinguished mention. Above all other European people the Dutch, though slow, have been patient and persevering in their agricultural labors. Occupying a few more elevated and fertile alluvial spots, in the midst of downs and bogs, and marshes and lakes, and the endless ramifications of many rivers, they have century after century struggled against nature. *Draining marshes, pumping out lakes, damming back seas and rivers, reclaiming bogs, fixing by art the wandering downs, interlacing their country with an interminable net-work of gigantic canals;*—by such labors as these, they have extended the productive surface of their country, secured its possession, and made its natural riches available. And what makes their praise the greater and more deserved, is the constant watchfulness and care which the retention of their country demands. Exposed on the average of the last thirteen centuries to one great sea or river flood, every seven years, the possession of the land they have gained, is never secure. Lying below the actual level of the sea, large tracts of it are only preserved by the huge dykes that surround them, and to maintain these dykes requires unceasing vigilance, and a large yearly expenditure of money.

And though in past times the Hollanders have done great engineering works, yet the spirit of the sires has not degenerated in their living sons. The draining of the Haarlem lake, now in progress, is the boldest mechanical effort ever yet made in the cause of agriculture in any country, and promises to add no less to the material wealth, than to the engineering and constructive fame of the United Provinces.

I feel a pleasure in thus advertising to the impression made upon my own mind, during my various tours in Holland, in the presence of a meeting of agriculturists, many of whom may inherit from the early settlers of New York, a portion of that industrious and patient blood, which makes every end sure to the determined and persevering man.*

I may mention as an indication of the early desire of the Dutch authorities to promote the diffusion of Agricultural knowledge, that a very old regulation prescribes attendance on agricultural lectures as a necessary branch of study to the established clergy of Holland.† And though in that, as in many other countries, men of the old school at present act as a drag on the progress of scientific agriculture, yet enlightened and zealous minds are at work in various parts of the Netherlands, and advance is gradually being made. The name of MURDER ought especially to be mentioned as most eminent among the scientific men of Holland, not only in advancing pure science, but in advocating and promoting its general applications to the agriculture of his native country.

ITALY.—From Holland turn for a moment to Italy, in which country drainage works somewhat akin to those of the Dutch, form the proudest monuments of which even that famed land can boast, of the victory which persevering intelligence can achieve over the difficulties and seeming hostilities of nature.

Did time permit, I might present to you a most interesting historical sketch of the changes in agricultural condition and capability which that country has undergone from the period of the ancient Etrurians to the present day. And to the man of science, such a sketch would be the more interesting, from the circumstance that in all the changes which have taken place, the physical and geological structure of the country, has exercised a far more prominent and permanent influence, than either the remarkable industry and constructive skill of the Etruscan inhabitants, or the hostile incursions of its foreign invaders.

To the rich alluvial plains of Lombardy, of which rice and Indian corn, and wheat and abundant milk, are the natural productions; and to Tuscany, in which something of the ancient industry and persevering practical skill of the old Etrurians* still survives, the agricultural enquirer must proceed to see the bright side of Italian cultivation.

But it is in Tuscany chiefly that he will find the most interesting evidence of the conquering power of the living mind over the obstacles of physical nature. The Maremme of Tuscany and the marshes of the Val di Chiana, like the Campagna and the Pontine marshes of the Roman dominions, have long breathed forth that pestilential malaria which, like the summer exhalations of the sea islands and river mouths of your Southern states, carries on its wings fever and lingering ague and frequent death. It is one of the great modern triumphs of engineering skill, applied to the promotion of rural industry, second only to the gigantic labors of the Dutch, of which I have spoken, and to the artificial drainage of our English fens—that the terrors of the Maremme have in a measure been bridled in—that the Val di Chiana, in so far as it lies within the borders of Tuscany, has been drained and dried—and that cheerful health and rich crops prevail over large tracts of country, in which it used to be almost certain death to linger.

Among a Republican people, I, who owe allegiance to a constitutional Monarchy, may be permitted to name to you Leopold the First, of Tuscany, as the principal author of all this good. Whatever our opinions on other matters may be, we shall all, I am sure, agree in this, that those men are great and worthy to be honored, who having been gifted by God with large means and great opportunities, make use of those means and opportunities for the glory of God and the good of their fellow creatures—who, instead of war and scarcity, and suffering and death, promote peace and plenty; and health, and the multiplication and prolongation of human life inculcates the truth that man's proudest triumphs are not those he achieves over his fellows, but those which he gains over himself, or by which he compels the unwilling powers of nature to minister to the material comforts of mankind—who encourages what will unite instead of distract, what will cement instead of divide the nations of the world—as that broad belt of water which lavas alike the shores of your country and mine, instead of separating, as in former years, now binds us together more closely than if the same continent contained us.

As the promoter of such ends for twenty-five long years in his country of Tuscany, the name of Leopold the First will not sound unpleasantly even in your republican ears.‡

* To those who are desirous of obtaining the means of forming clear notions of the physical structure of Italy, of its climatic conditions in the times of the ancient Etrurians, and of the industrial skill as well as the social relations of this people, I venture to recommend a perusal of Denis's *Cities and Cemeteries of Etruria*.

† For an account of the reign of Leopold, see Napier's *Florentine History*, Vol. VI, and for a detail, with drawings, plans and maps, of the engineering operations by which the Maremme were dried, see *Memorie sul Bonificamento delle Maremme Toscane*, by Fernando Tarlini, Florence, 1839.

* For a fuller account of the *Rural Industry and Drainage of Holland*, which I wrote for the *Edinburgh Review*, see vol. 86, p. 419, of that work.

† This must be considered an admirable provision, enabling the pastor to advise in regard to the temporal pursuits, no less than the spiritual affairs of his flock.

FLANDERS AND BELGIUM.—In Flanders, both Belgian and French, you are probably prepared for an admission on my part, of great agricultural skill and success. I am compelled, however, to confess my own impression to be, that a great portion of what has been written upon Flemish husbandry, partakes of the character of a romance.† The cultivators of Belgian Flanders have the merit of raising fair crops from certain tracts of poor and sandy soil, of husbanding and applying manures so as to keep such land in culture, and of skilfully varying their crops so as to prevent a premature exhaustion. But no knowledge of the general principles of agriculture is widely diffused among them. The improvement of wet and heavy clay soils, except by open ditches, is almost unknown. Improving implements and thorough drainage, and modern modes of manuring, and some small instruction at least in the elements of science as applied to agriculture, have still to be introduced among them, before they can rank in general knowledge or in skilful practice with the farmers of Scotland or England.

And, indeed, in Belgium as in France, the progressive subdivision of property opposes a growing obstacle to that general amelioration of agricultural practice, which the wants of a numerous people and the progress of knowledge demand. Where the average extent of properties and farms over a whole province is already reduced to about an English acre, we cannot look for the introduction of any of those improvements which demand the purchase of new or comparatively costly implements, the rearing and feeding of multitudes of stock, the employment of hired labor, or generally the application of capital to the land. As in Ireland, the subdivision or morcelling of the tillage farms, has already, in whole districts, been carried to the starvation limit. As into Ireland, the potato failure brought with it into Belgian Flanders, famine and disease, and large emigration,—and notwithstanding all that wise governments can do, it is to be feared that on the recurrence of similar visitations, similar social evils will in both countries again re-appear.

FRANCE.—In France I need hardly inform you that practical agriculture is far in arrear. In Normandy the mixture of Teutonic blood has probably some connection with the superiority of the husbandry of this province as compared with most of the other parts of the kingdom. It is certain at least, that notwithstanding the many efforts made by persons in power to promote the introduction and adoption of better methods, the general farming of La Belle France advances with comparative slowness.

This country indeed presents another striking instance of the small connection which may exist between the existence of extensive means of agricultural instruction, provided by the central government, and the practical skill of the rural population.

In 1843 there existed in France one hundred and fifty-seven agricultural societies—six hundred and sixty-four agricultural committees—twenty-two model farms, some of which had schools attached to them—and fifteen schools and chairs of agriculture and agricultural penitentiaries. In the early part of 1849, under the auspices of the republican government, and as part of the plan of M. Fouret, then Minister of Agriculture, twenty-one farming schools had already been opened—a national agricultural university was about to be established on the farms in the little park of Versailles, and a hundred and twenty-two agricultural societies, and three hundred minor institutions, had participated in the funds voted for the encouragement of Agriculture.

† *L'Agriculture Pratique de la Flandre*, par M. J. L. VAN AELBROECK, Paris, 1830, and *Mémoire sur l'Agriculture de la Flandre Française et sur l'Economie Rurale*, par J. CORDIER, Paris, 1823.

Though it is unquestionable that a country may attain a high rank in agriculture without the aid of formal agricultural schools—provided, as in Scotland, other early mental training is placed within the reach of the rural population—and that in spite of numerous schools, if other obstacles intervene, the cultivators of a country may lag far behind:—yet both common sense and experience show that of two nations of the same blood, placed otherwise in the same circumstances, the one which teaches the principles of agriculture in its schools, will exhibit the most productive harvests on its fields; and that, as in England and Scotland now, a time will come in the agricultural history of every country, when old means and methods will fail to maintain the rural community in a flourishing condition, and when every new means of fertility which advancing knowledge can supply, must be made generally known, and become generally employed. Such are the simplest and most common sense arguments in favor of agricultural teaching—the inutility of which might be argued with some show of reason, from the comparatively small progress yet visible among the fields and farmers of France and Bavaria.

The agricultural statistics of France, which the government has collected and published in great detail, would supply many interesting subjects of reflection, were I at liberty to dwell longer on this part of Europe. I may only mention—as pregnant with thought and instruction in regard to the condition, the food, and the general mode of living of the rural classes of France—the fact, that the number of conscripts who are rejected on account of deficient health, strength and stature, is constantly on the increase; that forty per cent are turned back from this cause; and that though since 1789 the standard has been three times reduced, as large a proportion of the conscripts is below the required height, (now five feet, two inches,) as ever.—(Rubichon.) Such facts as this show how closely the discussion of agriculture is connected with that of the most profound social evils.

SWITZERLAND.—To Switzerland, I only allude as one of those countries in which the influence of natural intelligence and a fair share of early instruction, had been brought to bear most successfully on the improvement of the soil, and especially of the breeds of stock which are best adapted to its peculiar dairy husbandry. Those advances which require the application of capital and science, such as thorough draining and special manuring, are there, however, still unmade; and it will probably be many years, before, in these respects, the cultivators of the Swiss vallies and mountain slopes, can closely imitate the present improved practices of the British Islands.

SPAIN.—The agricultural condition of Spain, suggests melancholy reflections. The central table lands of this country* are reckoned among the finest wheat growing districts in the world. The culture is rude and imperfect. The soil is scratched with a primitive plough, and is seldom manured, yet the returns are said to be prodigious, and the quality of the grain excellent. But where nature does much, man too often contents himself with doing little. Amid all this plenty, the peasant is miserable. He lives in a cabin of baked mud, or in burrows scooped out from the friable hillocks, ignorant of the luxuries of furniture, and barely possessing the necessaries of life. The want of roads and of means of easy transport, makes his produce almost worthless, so

* The two elevated plains of New and Old Castile, and that of La Mancha, separated from each other by the granites and metamorphic rocks of the Sierra Nevada, are composed of a white limestone, occasionally covered with the drift of other rocks. These plains are burned up in summer, so as to produce no grass till the October rains fall, but they yield magnificent crops of wheat. (Sir E. Head.)

that a comparatively spare population exists, and much wretchedness in the centre of fertile fields and a land abundant in corn.

We sometimes think ourselves unfortunate to have been born, or to be doomed to live where clouded suns impart a lessened light and heat; or where the frosts of winter bind up for many months the hardened earth. Yet in such climes, man more really lives, and exercises a truer dominion over inanimate things, than where tropical skies appear to prepare him for an unceasing enjoyment. Where mind and mental energy are dormant, he only vegetates or exercises his brute passions. Where by perpetual struggles he subdues the adverse elements, bends circumstances to his will, forces a copious abundance from an unwilling soil and in spite of inclement seasons--there he most truly lives, and amidst his hardships enjoys life most; there refreshing sleep visits him with her balmy breath, and in the power of mind over matter, which his success displays, he brings out more clearly the claim of man to a likeness with Him who is all mind, and to whose slightest intimation all matter bends.

(To be continued.)

LABOR WELL APPLIED IS PRODUCTIVE OF PROFIT.

An intelligent writer in the *Genesee Farmer*, under the above head, makes the following judicious remarks:

Farmers should ever bear in mind that "well directed labor" will insure its reward. Of all classes of men, there is none upon whom this truth needs to be enforced more than the farmer. How many of our farmers are year after year toiling on, overwhelmed with their business on an immense estate, and at the close of the year the accounts are about balanced, and again the same toil and vexation must be renewed! If rightly-directed efforts had been put forth, no more land farmed than could be done to perfection, what a saving of labor, what an increase of profit, what a reward in every point of view, would be received! In travelling through the best farming districts of this country, we often find illustrations of this truth most striking.

I have in my eye a farm of medium size, which, a few years since, was anything but neat and in order, and which gave sad indications that labor had not been "well applied." But a change has come over this scene. A new occupant takes possession, fixed in his principles--determined that he would carry out this great maxim, on which depends the prosperity and success of the farmer, that "What is worth doing, is worth doing well." Now, how soon the farm begins to assume a new appearance! the fences are repaired, the land is drained where needed, the buildings are neatly repaired and arranged; manures are obtained best suited to the soil, and crops which are adapted to this region; a new and improved stock of cattle, sheep, and swine are secured, and in short every thing characteristic of the good farmer appears year after year, under the direction of him who knows how to *apply labor*. Instead of having, at the end of the year, to resort to loans to make up the deficiencies, this same farm yields a return that gladdens the heart of the farmer. As years roll on, each succeeding one finds a larger balance in favor of well-directed labor; and now, in addition to the ordinary appendages of a farm, there is reared, out of the profits of this well-regulated concern, a neat and tasty cottage, in the midst of shrubbery the most tasty and luxuriant--all the work of him who started with the determination to do all things well. And this is not all; as the well-regulated expense book is balanced, a profit which would gladden even the hearts of some of our bankers on the capital invested, is found on hand, to be applied as may best conduce to

the comfort and welfare of an interesting family. There is no complaint of means to educate the children. They are brought up practically to appreciate the maxim that "What is worth doing, is worth doing well," and their education prepares them to carry out in all the varied scenes of life this all-important but too little practised truth.

Let me then urge upon the farmers who read this paper--an 'I am glad to know they are many, and among the most intelligent in our land--to put in practice, if they have not already done so, this simple but effectual method of farm labor, which brings with it the most abundant reward, and without which they will in vain struggle on, never securing the end of their toil. Order is Heaven's first law, and let it be yours in every thing relating to your farm. Remember you belong to a noble profession, and one that is destined to exert a mighty influence on the destinies of a world. As one man, then, let the American farmers adopt as their motto, "*All things relating to my farm shall be well done*,"--and no more shall be undertaken than can be thus done,--and soon they will be found to occupy that exalted position that will cause their influence to be felt the world over. Surely it cannot be necessary to urge upon the enlightened, the intelligent, the hard-working American farmer, further considerations in support of a principle that must, on a moment's reflection, commend itself to every right-minded reflecting man.

AGRICULTURAL ASSOCIATION OF UPPER CANADA.

NOTICE IS HEREBY GIVEN, that a meeting of the Agricultural Association of Upper Canada will be held on Wednesday the 20th day of February next at ten o'clock in the forenoon, at the Court House in the city of Toronto, for the purpose of considering certain amendments to the constitution of said society, to be then and there submitted; and also for the transaction of other important business connected with the Association. A full attendance therefore is urgently requested.

The directors will have to appoint two persons to act as judges, in connection with another, to be selected by the Governor General, for the purpose of deciding the prize of 50L., offered by his Excellency for the best essay on the connection between the canals and agriculture of Canada.

By order,

GEO. BUCKLAND, Secretary.

Toronto, January 2, 1850.

OSBORNE'S STEAM PLOUGH. -- In the London *Mechanic's Magazine* we find it stated that Mr. Curwood, of Whitechapel, has constructed, under the patent of Mr. Osborne, King-street, St. James's, a steam locomotive engine, expressly for agricultural work, or steam haulage on canals, in conjunction with Mr. Andrew Smith's wire rope. In the first trial, made on a farm in Essex, a pair of their steam engines were placed opposite each other, about 120 yards apart, with a sufficient length of wire rope between them, the surplus being coiled round the beam of one of Lowcock's two-way ploughs. This trial, although not successful, proved that the conditions of the two modes of draught differ essentially; horse draught being upwards, and exercising a direct control by its proximity to the plough; whereas the draught by steam power is distant and downwards, and

exercises no direct control on the plough: hence the experiment was instructive. Another trial was made, extending the distance to 210 yards between the engines, when, with both a Kent turn and an Essex rest plough, very good work was accomplished. The subsequent trials were made with a two-wheel single engine, the wire rope being returned through a pully anchored opposite the engine, and were equally successful as regards the work done. When a common swing plough was tried, the downward draught buried it beyond the necessary depth at once. From these rude trials, with an engine of ten-horse power, which is locomotive, or can be drawn by two horses, we think there is little doubt of the practicability of the plan, as now tested; but on the question of its economy, nothing but actual experiments on a large scale, with suitable implements, can determine.

These engines possess great advantages, in being applicable to threshing and other agricultural purposes, and can be moved from farm to farm or from one field to another with the greatest facility. The mode employed for taking up the wire rope constitutes the patent. The compactness of the engine is admirable; for, while it is equal to ten-horse power, and performs three distinct operations, its compass is only 10 feet by 6½ feet, the height of boiler being 5 feet. There is now every prospect of an extensive and profitable application of steam power being made to many of the purposes of agriculture.

BENEFITS OF AGRICULTURAL EXHIBITIONS.

Horace Greeley of the New York *Tribune*, in writing from the State Fair at Syracuse, thus speaks of the utility of such exhibitions:—

“There cannot be less than two or three hundred different kinds of agricultural implements on exhibition here—horse-rakes, cultivators, straw-cutters, subsoil and all other plows, new bee-hives, water-wheels, horse power saws, &c. &c. I consider this altogether the most important feature of the Fair. A great ox may be reared by a greater fool; but no man who ever worked a year at farming can spend a day among these implements and inventions without being stimulated to think. The great end of all such exhibitions is an improvement of the breed of farmers—of men. Now the man who has been skimming over a hundred acres of land for the last twenty or thirty years, plowing six inches deep, manuring with his good wishes, and growing fifteen or twenty bushels of corn to the acre, cannot spend a day in one of these Fair enclosures, without being startled and shamed. These subsoil plows, one of which, properly used, would double his usual product of corn and vegetables, and in dry seasons treble it—these straw-cutters, with one of which his scanty crop of hay might have been made, with the aid of straw, stalks, &c., to winter his stock bountifully—these cultivators, seed-planters, horse-rakes, and other labor-saving implements, must set him thinking. What sort of crops do those farmers obtain who use such implements? Who make the most by farming—the fifteen or the fifty bushel corn-growers? What sort of farmers is it who are able to buy land, when any is for sale low for cash? What sort of farming leaves land in condition to sell advantageously? These questions arise spontaneously in the simplest minds, and they will be answered. I don't believe a farmer can attend three successive Fairs,

and not resolve to farm better through all his life afterward.

“No other business could bear to be managed so wretchedly as farming still is. Only think of civilized men killing their bees to get the honey, in this nineteenth century after Christ. Killing a cow to obtain her milk would be on the same principle. Yet to this day half the bee-men smother their bees to get the honey, although the land is full of simple and cheap hives, on a more humane and economical principle. How long shall the stupid barbarism of smothering bees continue?”

MODE OF FATTENING CATTLE IN GREAT BRITAIN.

John Bull loves fat beef, and some of the beef in that country is made enormously fat. The following is the mode of feeding adopted by the Messrs. Davey, and some others, in Scotland. The cattle are kept in what are called boxes or pens, and the following feed given them daily, to each:—

2 lbs. linseed, (flaxseed),	cost 2½ pence.
6 lbs. barley meal, or rye,	4½ “
84 lbs. turnips,	4½ “
14 lbs. hay,	4½ “
Attendance and fuel,	1½ “
	17½ “

or about 30 per cents. of Yankee money per day.

The chopped straw or hay was first mixed with the meal, in a shallow wooden cistern, and was incorporated with the linseed or flaxseed, in a boiling state. The cattle were fed six times per day, and on this system they were enabled to fatten an ox weighing 10 cwt. of the very best quality of meat, in sixteen weeks. It is stated that the farmer is enabled thus to feed three animals, instead of one on the old system, and thereby make a quicker return of capital, which is the life of trade. It will be seen, according to this, that if it takes sixteen weeks to fatten an ox, at 30 cents cost per day, the cost of fattening would amount to nearly 37 dollars. Their markets must be very excellent, to allow them a profit.

We guess the thing could be done here much quicker, and more profitably, on Indian meal and potatoes.—*Maine Farmer.*

ON PLOUGHING.

In wet soils it is necessary to have the fields ploughed in small ridges, so that the open furrows may carry off the superabundant water. Those who are possessors of such land I shall pass by in the meanwhile: it is only those who occupy thoroughly drained lands, or who have had the good fortune to have naturally dry, that I wish at present to address myself. Although I do not mean to say that I will disclose a mystery, yet I shall endeavour to point out a prevailing error which every day meets my eye, for even on land thoroughly drained, or naturally dry, the old eighteen-foot ridges are still persisted in. Being for sometime back annoyed at the insignificant appearance of the crop in the ‘hinting fur,’ (as we locally term them), I was desirous of having the matter decided, as to what difference there was from the even field. On a field of oats after lea, I had an average furrow cut, three feet in breadth, and the same breadth on the even field alongside. Both these were carefully threshed, and the result was, that the even field produced exactly three times the quantity of grain grown on the same breadth of land, I may say partly laid waste by the open furrow; the average produce of the field was seven quarters per acre; and had that field been ploughed as it ought to have been, without an open furrow, the produce would have been increased three bushels per acre,—hence the advantage of the turn-wrest plough.

In some counties in England where farming is carried to a very high pitch (although we Scottish farmers would fain claim superiority), the land intended for grain crops is mostly ploughed by the turn-wrest plough, more especially in Kent; hence we are often referred by writers to the Kentish turn-wrest plough. But to come nearer home, in the south of Scotland I have had the opportunity of seeing several fields ploughed, and in the course of ploughing, with an implement as above alluded to, invented and put in operation by that eminent Agriculturist Mr. Smith, late of Deanston. The constitution of the plough differed little from the one in common use: the share was formed so as to cut the furrow slice right or left; the mould boards were attached to each other, and, by a small rod scientifically attached thereto, the ploughman turned them with facility. Hence the ploughing of a field was performed without a *feering* or *hinting furrow*.

The above is the most practical method that can be adopted in ploughing land where open furrows are necessary, more especially where the fields are bounded by unequal sides; but where the fields are square or equal-sided, the desired end may be accomplished with the common plough by commencing at the boundary, and driving right round the field in the direction against the sun's course, thereby the ploughing will be accomplished, not only without an open furrow, but more expeditiously than ploughing in ridges, as the turning—a great disadvantage—is almost dispensed with. This system I have adopted with advantage; the only objection the ploughmen made being, that they could not show their dexterity in driving a 'hinting,' which, if neatly performed, is much boasted of; but profit is of more consequence than pleasure.—A. F. J.—*Scottish Farmer*.

ECONOMICAL MODE OF FEEDING STOCK.

Farmers who have but few animals, say two or three cows, a yoke of cattle, or a pair of horses, will find it greatly for their interest to cut their corn-stalks, straw, and even hay, when it bears a high price. When this is done, put the cut fodder into casks of suitable dimensions, take hot water, to prolong the heat, and salt it at the rate of two quarts to a barrel. All know that brine can be kept hot longer than fresh water. Pour this upon the cut fodder, as fast as possible, in order to prevent the escape of heat, cover the head of the cask close with a blanket, or anything convenient which will keep in the steam, and let it stand half a day, or longer, when it will be found tolerably well cooked. Now place it in troughs for the stock; and if you have a little meal or bran to sprinkle over it, your animals will relish the food so much the better, and it will do them more good. Corn-stalks, straw, and coarse hay, are worth twice as much for food, when thus prepared, than if thrown out neither cut nor steamed. We give the above from experience, having been in the habit of following the practice for years.

Farmers labour diligently during spring, summer, and autumn, to raise and harvest fodder, then allow a large portion to be wasted from sheer negligence. Winter is their leisure time, and they should endeavour, at some extra pains, to economise the food they have worked so hard to procure. Machines for cutting stalks, straw, and hay, have been much improved and multiplied within a few years past, and can now be had at low prices. It is economical to possess them, and no farmer should be without at least one on his premises.—*American Agriculturist*.

THE ART OF WHEAT RAISING.

Although the culture of wheat has been more or less practised ever since men have cultivated the earth, it is doubtful if the true art of raising it is fully understood.

It is not a difficult thing to raise wheat, when all the elements are favourable to its growth. By this we mean when the composition of the soil, and the weather and other incidents of the climate are right, and insects and certain external enemies do not interpose. But to raise it when all these requisites are not supplied by nature, is not so easy. The great art, therefore, consists in knowing, in the first place, what is needed, and, in the second place, how to supply it. Many of the countries of Southern Europe, as Sicily, for instance, which in olden times were very prolific in this grain, now afford but scanty crops of it. The reason of it is probably this: the material in the soil necessary to make a good crop of wheat has become exhausted, is taken out and carried off years ago in the abundant harvests of that time, and the peasants do not know how to supply it again. From what accounts we can gather, the art is understood at the present time as well perhaps in England, as anywhere else in the world. There are many reasons why this should be the case. The crowded state of the population there causes a great demand for bread stuffs, and these stuffs accordingly bring a comparatively great price. Hence the farmers pay greater attention to the subject, and are remunerated for their extra care and attention by the advanced state of the markets. In this country, especially in the western wheat-growing States, as they are called, no such incentives act upon the wheat raisers. They have a virgin soil to cultivate. All that is required is to plow, harrow and cast the seed into the earth, and wait patiently for the time of harvest. This course will, in time, exhaust their soil, however fertile it may be now. After generations will be under the necessity of studying the art of wheat raising, or be content with diminished crops. The experience of some of the older states is reading this lesson to them.

It has been doubted if the culture of wheat is any better understood in England than in our own country, or that they do raise any larger crops than are raised in Western New York. That they do can be abundantly proved; and even if they raised no better crops, but those equally as good, it must be evidence that they understand the art pretty well, for it must be remembered that their soil has been a long time in cultivation, and if it had not been well replenished with what that crop requires, it would have been exhausted long since.

In the transactions of the New York State Agricultural Society for 1848, we find a letter from J. Slocum, addressed to the secretary of that Society, on this very subject. Previous to Mr. Slocum's visiting England, he did not believe that the English did raise better wheat crops than were raised in New York; but actual inspection convinced him of the contrary. In the letter referred to he says:—"On the 26th of August, I visited the farm of Mr. Peter Lane, at Nazeby, Northamptonshire, 75 miles from London, and was much gratified to find him in the midst of his wheat harvest, and most seriously do I wish I could present to the view of the farmers of this country, his luxuriant fields of wheat, as they appeared to me. Having been bred a farmer, and having had for many years opportunities to observe the wheat crops of Western New York and the Western States, I thought I had seen as good wheat as could be produced; but I had never seen anything that could compare with this whole crop, which consisted of about fifty acres of winter wheat and twenty-two of spring wheat. On enquiring of Mr. Lane how much the seventy-two acres would probably yield, he answered four hundred quarters, or thirty-two hundred bushels, and in this estimate he was not disappointed, as I was again at Nazeby in November, when he had thrashed and sold a large portion of his crop. Although this seemed to me an extraordinary yield, it was not so regarded by Mr. Lane, and I was satisfied, from subsequent enquiry and obser-

vation, that it was *not* much above the average yield of the wheat producing counties of England. The soil of this farm, Mr. S. says, is "what is termed in England 'strong land,' being a stiff red clay, intermixed with flint and iron stone, alternating occasionally in the same field with loam and gravel."

Our farmers would think they were doing pretty well to average over forty-four bushels to the acre, in a field of seventy-two acres of wheat, and it is fair to infer that this excellent crop must be attributable as much to understanding the art of cultivating as to the strength of the soil.—*Maine Farmer.*

TO WHAT EXTENT DO THE ROOTS OF PLANTS ENTER THE SOIL?

Perhaps no fact is so little understood as the depths to which the roots of plants will travel in a well disintegrated soil; the length of roots, also, in their horizontal travel, is much greater than is generally supposed. We have tried a number of experiments to ascertain these facts, and the results are as follows:—The roots of Indian corn, although invisible to the naked eye, have an average length of five and a half feet, while those of the onion are generally eighteen inches in length. If a trench be dug through a garden which has been thoroughly sub-soiled, and the side of this trench be washed carefully with water, the roots will be found to pass down to a depth of thirty-four inches as a maximum; such plants (like the onion) as have a less length of root going to lesser depths. During a severe drought, however, even the shorter rooted plants will throw down minute fibres, which bring up moisture for the sustenance of the plant.

Thus we find that meadows, if well sub-soiled to full depth, before being put down to grass, never run out; but those which have been plowed to slight depths, soon begin to fail. We have examined many such meadows, and have always found that when the termini of the roots of grasses meet with a cold and compact sub-soil, they decay and prevent a healthy condition of the plant above; those meadows which have been previously fully sub-soiled may be mown for years without any material deterioration in quality; and, indeed, if the soil contains a full supply of constituents or receives them from judicious top-dressings, the meadow may be mown for any length of time without renewal.—*Working Farmer.*

N. Y. STATE AGRICULTURAL SOCIETY.—The following are the officers appointed for the ensuing year, at the annual meeting, held on the 17th inst., at Albany:

- President.—E. B. PRENTICE, Albany.
- Vice-Presidents.—Ambrose Stevens, N. Y.; Lewis G. Morris, Westchester; Anthony Van Bergen, Greene; Z. C. Platt, Clinton; J. B. Burnett, Onondago; E. C. Frost, Chemung; Oliver Phelps, Ontario; Nelson Van Ness, Chautauque,
- Cor. Secretary.—B. P. Johnston.
- Rec. Secretary.—J. McD. McIntyre.
- Treasurer.—Luther Tucker.
- Executive Committee.—B. B. Kirtland, J. J. Viele, H. Wendell, A. Thompson, Henry Wager.

The next Fair is to be held at Albany. The Society unanimously adopted a resolution, requesting Congress to establish a National Agricultural Bureau.

TO CURE BLOATING OR HOVEN IN CATTLE.—A tablespoonful of spirits of hartshorn, for an ox or cow, or a teaspoonful for a sheep, will afford instantaneous relief. It should be diluted with water or milk. It acts by decomposing the gas generated in the stomach, which is the cause of the disease.

THE FARMER.—A BEAUTIFUL PICTURE.

The man who stands upon his own soil, who feels that by the laws of the land in which he lives—by the law of civilized nations—he is the rightful and exclusive owner of the land which he tills, is by the constitution of our nature, under a wholesome influence, not easily imbued from any other source. He feels—other things being equal—more strongly than another the character of a man as the lord of the inanimate world. Of this great and wonderful sphere, which fashioned by the hand of God, and upheld by his power, is rolling through the heavens, all is his: his from the centre to the sky. It is the space on which the generation before him moved in its round of duties; and he feels himself connected by a visible link, with those who preceded him, as he is, also to those who will follow him, and to whom he is to transmit a home. Perhaps his farm has come down to him from his fathers. They have gone to their last home; he can trace their footsteps over the scenes of his daily labours. The roof which shelters him was reared by those to whom he owes his being. Some interesting domestic tradition is connected with every enclosure. The favourite fruit-tree was planted by his father's hand. He sported in his boyhood beside the brook, which still winds through the meadow. Through that field lies the path to the village school of earliest days. He still hears from his window the voice of the Sabbath bell which called his fathers and his forefathers to the house of God, and near at hand is the spot where his parents laid down to rest, and where, when his time is come, he shall be laid by his children. These are the feelings of the owner of the soil. Words cannot paint them—gold cannot buy them; they flow out of the deepest fountains of the heart; they are the life-spring of a fresh, healthy and generous national character.—*Hon. Edward Everett.*

SIMPLE REMEDY.—The following simple application for a horse's feet which are brittle, or hoof-bound, I learned from an English shoer, and having tried it with good effect and never having seen it fail, I send it to you to be used as you may deem proper.

Mix equal parts of tar and some soft grease, and having the foot clean and dry, apply it hot, but not boiling, to all parts, letting it run under the shoe as much as possible.

In bad cases the application should be made every day, for a while, and then two or three times a week, till the foot becomes strong and smooth.—*Correspondent Genesee Farmer.*

GALLS FROM HARNESS OR SADDLE.—"A Volunteer" tells the *New England Farmer* that the following remedy was found to be invaluable in the fatiguing marches in Mexico:—"White lead, finely pulverized, is the most effective application. Rubbed on dry, or made into a paste with milk, and applied a few times; it will also prevent white hairs growing on galled places."

RECIPE FOR A RIDER.—Keep your head up, chin down, chest forward, shoulders back, elbows in, hands down, back in, belly out, fork forward, thighs fixed, knees in, legs close, heels down, and toes in. Trot two hours a day without stirrups, loins loose, seat firm, hand tight, horse and rider well balanced, and then time and perseverance may make you a horseman.

TAN CONVERTED INTO MANURE.—This, it is said, may be successfully accomplished, by placing alternate layers of spent tan and lime—the former two feet thick, the latter $\frac{3}{4}$ inches—remaining thus for two years.

Horticulture.

IMPORTANCE OF ORCHARD PLANTING.

J. DOUGALL, ROSEBANK NURSERY, AMHERSTBURGH.

Climate and Soil of Canada peculiarly adapted to Fruit Culture.

Steep banks or sides of hills, or stony ground, unfit for cultivating other crops, may be profitably planted with fruit trees; but in this case, a space of at least eight or ten feet in diameter must be cleared from stones and thoroughly trenched; and if the land is poor, the subsoil should be thrown away and good earth put in place of it, before planting the trees; and this space, and even more as the tree increases in size, should be dug or hoed over twice a year, to destroy the grass and weeds, which otherwise soon choke up the trees; they should also be manured from time to time. After the trees have attained a good size, these spaces might, in some cases, be laid down with grass, and sheep or calves could be pastured without injury to the trees.

Care, however, must be had on the sides of hills, where the subsoil is a retentive clay, and where it has been thrown out and replaced by other soil, that a small drain be made from the lowest side of the hole thus formed till it comes out on the face of the hill side a little below the level of the bottom of the holes, to carry off the water; otherwise the trees would be much injured, if not killed, by the water retained in these holes, which would be oftener full than on level land, as the water running down the hill would be caught in the holes like so many cups, and the roots would be destroyed by freezing in winter, and almost boiled with the heat of summer. I have known some fine trees, bought from me, killed by being planted in this manner on the slope of a bank, without forming small drains to carry off the water, and the purchaser could not understand how they should die, when he took such pains to make large deep holes, and fill them with fine rich earth. When the reason was explained to him, he saw at once his error. A very small trench, as deep as the bottom of the hole, and filled up with small rubble stone, will be quite sufficient to carry off the water. It may be said that this is a great deal of labour, but nothing could be raised without labour, and if fine fruit will not pay for it, nothing else will; besides, it is not half as much as sowing and reaping the same space of ground, even on level land would be, while the profit of the fruit will be much more than could be realised from a similar extent of the best fields in any other crop.

In the colder parts of Canada, a warm sandy loam will be the best soil, in general, for orchards and gardens; but in the warmer parts, gravelly loam, or a strong loam, will be found more suitable, as the trees will grow better and be longer lived, whilst the fruit will be larger and finer. For the peach, sandy soils have been considered the best—it comes earlier into bearing on these soils, as it does not grow so strong, and the fruit is larger; and if the soil is a yellow, sandy loam, it will not be so liable to injury from late spring frost. But where the climate is suitable, I have found strong clayey loams much better for a peach orchard than sandy soils. The trees grow larger and healthier and last much longer, and the fruit, though not just so large, is much higher flavoured.

A strong soil is most suited for the plum, as on light sandy soils it is more liable to attacks from curculio, and the tree does not grow so strong and healthy.

The cherry does best on a sandy or gravelly loam, though it will thrive on all good dry soils. On wet or undrained soils, with clayey subsoils, it does not thrive.

The apple and pear will succeed on any good dry

soil, but they require different culture on different soils. In dry soils, with gravelly or sandy subsoils, little need of draining will be required. The larger and deeper the hole for the reception of the tree, and the richer the earth (if not mixed with fresh manure) the better. But on clayey subsoils, unless the land is thoroughly underdrained, and subsoil or trench ploughed, the holes, though they may be made wide, must not be made deeper than to the subsoil, below which the trees should not be planted; and if the surface soil is shallow, a broad mound of rich earth may be made around the tree. The reasons for this were explained previously, in giving directions for planting on side hills. It may be said, that no person should plant trees on any soil, more especially those of this nature, without underdraining and subsoil ploughing or trenching the land, and I grant that such is the case; but as I know that many persons will not be at this trouble and expense, but would rather do without orchards than underdrain and subsoil the land—to these I would say, that very good success may be attained by planting, as above directed, after good common ploughing. I planted one orchard in this way, on the top of a retentive clayey subsoil, which is flourishing well, but, undoubtedly, it will not last so well as others that have been underdrained and subsoil ploughed.—*Montreal Witness.*

(To be continued.)

REPORT ON MR. MARSTON'S NURSERY.

L'Original, 20th Aug. 1849.

MY DEAR SIR,—I have noticed with much pleasure the taste which you have displayed as an horticulturist, in bringing your nursery to that degree of perfection which it at present exhibits. I wish to transmit to the Provincial Agricultural Society any statement you may be pleased to favor me, stating the extent of your nursery, the kind of trees it contains, the number you have grafted, and the number you have budded. You will also be pleased to give me any other information connected with your pursuits as an horticulturist. I shall be happy to receive your answer before the 1st of September, that I may transmit the information to the Provincial Society at its annual meeting.

I am, my dear sir,

Your obedient servant,

C. P. TREADWELL, *President O. D. A. S.*

To Mr. Josiah C. Marston.

L'Original, Sept. 1849.

DEAR SIR,—It is with much pleasure I answer the enquiries you make concerning my nursery. You are aware that I am as yet but a beginner, and not exactly entitled to the name of an horticulturist, but I trust that I shall be yet worthy of assuming that high name. I am anxious to import into the district all the fine varieties of fruit that can be obtained. With this object in view, I intend, as soon as circumstances will admit, to try all the different kinds, in order to ascertain which will suit our climate best. My experience in horticulture, which is but limited, has been chiefly confined to apple trees. I have had no difficulty in grafting and budding as yet; the former I usually perform earlier in spring than is necessary in warmer climates, the object of which is, to give the young shoots an early growth, &c.

that they may get well matured before the coming winter. With seven years' experience, I have not lost six per cent., in practising the common mode of cleft grafting. In old trees, when I work young stocks, I prefer budding (American Shield budding), having found it the safest and most speedy way of working fruit trees. I have now in my nursery grounds 25,000 apple trees and 500 cherry trees; of the former 2,500 are one year old from the bud, and 2,000 of the present season also from the bud. The following are the kinds.

Early Harvest,	Roxbury Russet,
Summer Queen,	English do.
Early Strawberry,	Grand Isle do.
Large Yellow Baugh,	Feather Coats,
Rhode Island Greening,	Paper Apple,
Fall Greening,	Spitzenburgh,
Winter Greening,	Oyster Bay,
Sweet Greening,	Stephen's Apple,
Yellow Bellflower,	Cat Head,
Newtown Pippin,	Seek no farther,
Twenty-ounce Pippin,	Fameuse,
Holland Pippin,	Siberian Crab,
Fall Pippin,	Northern Spy,
Lady's Pippin,	Prunetto,
Pumgries—Sour	Sweet Pearmain,
Do. —Sweet	Blue do.
Pound Sweeting,	Glass Apple,
Mouser Sweeting,	St. Lawrence,
Ewing's Sweeting,	Gilliflower,
Menkly do.	Suran,
Wing do.	Barnisan.

Together with the other native varieties of fine quality. My cherry trees, many of which are bearing, are of the common English variety.

The number of lbs. of maple sugar I manufactured during the last three years, is as follows:—

In 1847	1500 lbs.
In 1848	1000 lbs.
In 1849	1500 lbs.

Unless some accident happen to my maple orchard, in five years from this date, I shall tap 3000 trees, which is more than three times the number I now tap. Had I time, I would give you a statement of the cost of manufacturing.†

I remain, your obedient servant,
J. C. MARSTON.

DRAINING WARMS THE SOIL.—It is reported, that in a garden in Hampshire, the temperature of the soil has been raised 15 deg. by draining heavy land four and a half feet deep. This, if true, is a prodigious gain—beyond anything that we could have attempted as a permanent result, even in summer—winter is of course excluded from the statement. Circumstances prevent our examining the statement in the case alluded to; but, allowing for some exaggeration, there can be no doubt that a result sufficiently approaching it to be of the greatest value, is attainable.

It is not now, for the first time, that the public attention has been drawn in the *Gardener's Chronicle*, to this highly important subject. On the contrary, we have on several previous occasions pointed out the undoubted fact, that an increased temperature is one of the most valuable results of deep drainage; a more probable cause of the immediate improvement of the health of

crops than the mere removal of water, or introduction of air into the soil. The nature of deep draining is in fact such as to render additional access of air to the roots of plants too inconsiderable to be appreciable. It is only when deep draining and deep trenching accompany each other, that any great access of air to roots beyond what is customary can be anticipated. Where both are secured, the effect is certainly magical.

There exists in Essex, not a hundred miles from Brentwood, an orchard of apples, pears, plums and cherries, which was planted about twenty-two years ago in a heavy clay, trenched down to an iron pan on which it lies. For a few years, the trees grow pretty well, that is to say, as long as their roots were near the surface, and received the warmth of the summer's sun; but as they advanced downwards, the growth became "small by degrees and beautifully less," till at last it ceased, and nothing flourished but an abundance of grey lichens, with which the branches were covered. The owner was advised to drain it three feet below the pan. In the first year afterwards, vitality was roused so effectually, that the lichens began to disappear, cast off by the swelling bark, and the last stage of decrepitude had been exchanged, by the end of the first six months, for youthful vigour. In the second and third seasons after the draining, the trees made shoots from four to five feet long.

We have no doubt, that the main cause of this remarkable and sudden change, was the elevation of temperature consequent upon very deep drainage. Rain becomes heated by the surface soil, and carries its temperature with it as far as it sinks into the soil. The gain in this way is variously estimated at from ten deg. to 15 deg. in summer—an enormous gain, which places plants on a hotbed—for soil heated ten degrees above the ordinary temperature is nothing else. Deep draining, therefore, not only offers considerable security against the introduction of roots into the water channels, but has the great and unsuspected advantage of considerably raising the temperature of the earth which is in contact with the drains, deep as they may be, for water cannot soak rapidly into earth without carrying warmth along with it. This is now so well understood by men of intelligence, that it is superfluous to dwell upon it.—*Gardener's Chronicle*.

NOVEL MODE OF PROPAGATING APPLE TREES.

We have mentioned almost every mode of multiplying or propagating apple trees that could be devised, but have been cautious about recommending those modes which have not been pretty thoroughly tested from the infancy to the old age of the trees.

Planting the seeds and grafting or budding the young trees, is the old established mode of propagating extensively the various kinds that we need or desire. The following mode we derive from the Patent Office Reports, communicated to Hon. E. Burke, former commissioner of Patents, by Timothy Dudley, of Mendon, in Adams county, Illinois. It seems that the plan succeeded well with him, and as he states that the scions took root, and that by breaking off all other roots, he confined the nourishment of the trees to their own roots, it may be a good method.—We have never seen the mode tried, and only give it to our readers as an item of intelligence in the business of raising trees, which they may try at their leisure or not, as they may deem advisable.

In the spring of 1840, says he, in the early part of March, I procured from the best orchard I could find, two or three large bundles of scions, cut from horizontal branches of the last growth. These I buried in my garden, three inches under ground, till I should want them.

† We should be obliged to Mr. Marston for this, or any other information in accordance with his pursuits.—[Editors of *Agriculturist*.]

When the season was so far advanced that the buds on the trees began to crack open, and the small leaves to appear, I dug a trench along each line of apple trees, (these trees had been set out in a nursery, four feet apart, a year before) about six inches deep and about the same width. I then bent down an apple tree, and with a forked stick drove into the ground, held it there firmly; then with a sharp pointed strong knife and a hammer, I commenced grafting. First, I drove the knife through the tree at the root, and made a cleft large enough to insert the scion. I then with a sharp knife cut my scion about six inches long, sharpened the lower end to a wedge-like form, and drove it into the cleft until the bark on the scion just met the bark on the tree; pulled out my large knife—the split in the tree of course closed, and held my scion fast. In five or six inches, I stuck in another, and continued so until I came to the top of the tree. I then filled up the trench with fine loose soil, tramping it down with my feet, leaving only the upper bud out of the earth. The top of the tree I covered up in the same way, leaving the ends of the twigs just out of the ground. In this way I treated one hundred apple trees. They were one-and-a-half inch in diameter, and very thrifty. The scions grew astonishingly well. Of about 800 set, all grew but about twenty, and in two years the scions had formed roots of their own, so that when I took them up, I broke off the root of the old stock and threw it away, and each twig of the top grew and formed roots of its own.

These trees, he says, are now bearing trees. As we said before, we have never seen this mode tried, and cannot recommend it from any experience of our own. If any of our readers in Maine have had experience in this mode of propagating trees, we should be happy to hear from them on the subject.—*Maine Farmer.*

WHEN IS THE FRUIT PREPARED?—It is not common for unreflecting men to disconnect, by considerable space of time, a cause from its effect. Whatever new occurs is referred to causes then and at the same place operating, instead of looking back, as it is often necessary to do, for a considerable time. The eggs of the Hessian fly are not laid at the time the worm is doing its work of destruction, but a half year before. Colds and low feed in winter produce disease and feebleness in the spring.

Guided by this law of things, which is to a considerable degree uniform, we may ascertain that fruits are not the result of culture bestowed in their immediate connection; but may generally be said to depend on causes which have been in operation for something like a year before. The cultivator who neglects his strawberry beds from the time the fruit is gone, till the following spring, will then renew his efforts pretty much in vain. The material of which strawberries are made, is got ready during the summer and fall of the year previous to that in which it is produced. Good culture applied then, enables the vine to obtain strength, and to lay up in itself a fund of those materials, which, in the following spring, come forth in the shape of delicious fruit. The same is true of the currant, the raspberry, and the gooseberry. In the spring of the year in which they bear, they have no time or opportunity to do much in the way of getting ready for the fruit they are to produce; but they are at it all the previous season. So of peaches, apples, pears, plums, and every other fruit of the sort. The growth of wood is made, ripened, and its tissues stored with materials for the next summer's fruit. If not done then it will never be done.

A knowledge of this law of production is of great use in directing us in the right modes of culture of those products which depend on perennial growth. If peaches or pears are to be cultivated, for the next season, that culture must be applied during the present one. If the

tree fails to ripen its wood properly this autumn it will not be ready for production next season. It will have no capital on hand, of which it may be made. The farmer understands this law in connection with his grain crops; which he knows must be cultivated long before hand. He need only apply the same to his fruits.—*Prairie Farmer.*

THE VICTORIA LILY OF SOUTH AMERICA.

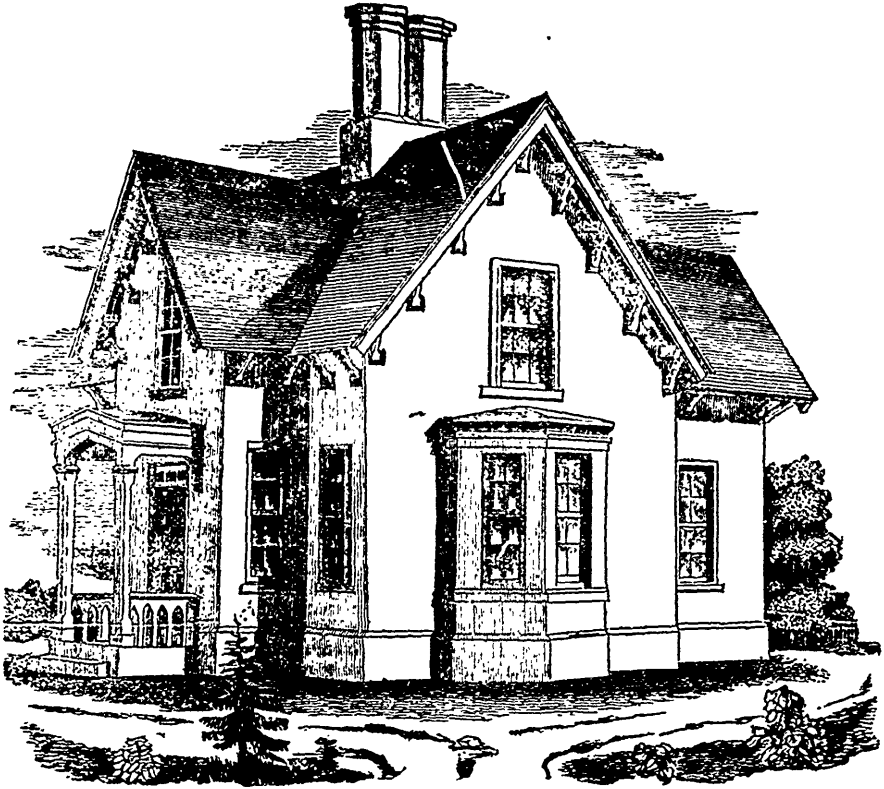
The Victoria Regia—for such is the royal name of this royal lily—is, as its gigantic character would naturally indicate, an inhabitant of the New World, having been on different occasions found, by scientific travellers, completely covering large tracts of expansive lakes and the placid waters of some of those great rivers which flow into the Amazon. It grows only in shallow water; but this does not prevent it occupying the surface of these rivers and lakes for miles of extent, to the exclusion of almost every other aquatic plant.

From published accounts of this extraordinary plant at Chatsworth—the seat of the Duke of Devonshire,—we learn that the first flower appeared (in bud) on 1st November last, partially opened on the evening of Thursday, 8th November, between five and eight o'clock, partially closed during sunlight on Friday 9th, and fully opened on the same evening between five and eight o'clock. On the morning of Saturday, the flower was beginning to decay. Professor Lindsay says:—"The flower itself, when it first opens, resembles the white water lily, of a dazzling white, with its fine leathery petals, forming a goblet of the most elegant proportions; but as the day advances it gradually expands till it becomes nearly flat; towards evening a faint blush becomes visible in the centre, the petals fall back more and more, and at last, about six o'clock, a sudden change occurs; in a few minutes the petals arrange themselves in the form of snow-white hemisphere, whose edge reposes on the water, and the centre rises majestically at the summit, producing a diadem of rosy points. It then constitutes one of the most elegant objects in nature. Shortly after, the expansion of the central parts proceeding, these points fall back; the stamens unfold in an interior coronet, the stigmas are laid bare, a grateful perfume arises into the air, and the great object of the flower, the fertilization of the seeds, is accomplished. Then fold inwards the petals, the flower closes, the fairest of vegetable textures become wrinkled, decay begins, and the flower stalk withdraws itself beneath the water, as if to veil the progress of corruption. But out of this decay arises a new living body; the fruit curved down swells rapidly, and in a short time the fruit, a prickly seed-vessel is observed concealed beneath the floating leaves."

The leaves of the plant are of extraordinary dimensions, and round, having upturned margins, to assist in floating them, and which give them a boat or dish-shaped appearance, hence the name given to the plant by the Guarani Indians, *Yrupe*, literally water-platter. At Chatsworth, some of the leaves have attained to nearly five feet in diameter, and the largest flower, we believe, 10½ inches in diameter. A young lady, somewhere about ten years of age, enjoyed a sail upon one of these gigantic leaves. In its native habitat, we learn that aquatic birds walk with care from leaf to leaf, which is likewise the case with the Nelumbium of the East—the "Lily of the Nile," which is not now, however, found on the "Father of Rivers."

A SUBSTITUTE FOR TEA.—Dr. Graham, an old and experienced physician in London, says, "I may state, on very respectable authority, that the first leaves of whortleberry, properly gathered and dried in the shade, cannot be distinguished from real China teas."

General Science and Miscellany.



FRONT VIEW OF AN ENGLISH SUBURBAN COTTAGE.

In our last number we gave an engraving of a beautiful cottage in the rural Gothic style, recently erected at Rochester, N. Y. This style is much copied by our American neighbors. Some one has truly remarked that the architecture of our dwellings is most appropriate when it "embodies and breathes forth a *home expression*," a character to which we think the rural Gothic, with its quaint, independent, comfortable and extended air, seems fully to lay claim.

We now present to our readers an engraving of an English Cottage, well suited to the peculiarities

of a suburban residence. Many cottages in the above style are to be seen in the suburbs of London, and other large cities. Several handsome dwellings in the English style have recently been erected in the neighborhood of this city, and as many of our readers have English tastes in these matters, we present them the above as a neat and not costly model, which may afford them some useful hints. The size will be determined by the necessities of the case, and the proportions can, of course, be easily maintained by the builder.

NATURAL PHILOSOPHY.

NO. II.

General Properties of Bodies.

There are certain properties, which appear to be common to all bodies, and are hence called the *essential properties of bodies*: These are, *Impenetrability, Extension, Figure, Divisibility, Inertia, and Attraction*.

Impenetrability is the property which bodies have of occupying a certain space, so that, where one body is, another cannot be, without displacing the former;—for two bodies cannot exist in the same place at the same time. A liquid may be more easily moved than a solid body; yet it is not the less substantial, since it is impos-

sible for a liquid and a solid to occupy the same space at the same time. For instance, if a spoon be put into a glass full of water, the water will flow over to make room for the spoon.

Air is a fluid differing in its nature from liquids, but no less impenetrable. If we endeavour to fill a phial by plunging it into a basin of water, the air will rush out of the phial in bubbles, in order to make way for the water.

If a nail be driven into a piece of wood, the nail pene-

frates between the particles of the wood, by forcing them to make way for it; for not a single atom of the wood remains in the space which the nail occupies.

Extension.—A body which occupies a certain space, must necessarily have extension; that is to say, *length, breadth, and depth*: these are called the dimensions of extension, and they vary extremely, in different bodies. The length, breadth, and depth of a box, or of a thimble, are very different from those of a walking-stick or of a hair.

Height and depth are the same dimensions; if you measure a body, or a space, from the top to the bottom, it is called the depth, if from the bottom upwards, it is called height. Breadth and width are also the same dimensions.

The limits of extension constitute *figure* or shape; a body cannot be without form, either symmetrical or irregular.

Divisibility is a susceptibility of being divided into an indefinite number of parts. Take any small quantity of matter, a grain of sand, for instance, and cut it into two parts; these two parts might be again divided, had we instruments sufficiently fine for the purpose; and if, by pounding, grinding, or any other method, we carry this division to the greatest possible extent, yet not one of the particles will be destroyed, and the body will continue to exist, though in this altered state. A single pound of wool may be spun so fine as to extend to nearly a hundred miles in length.

The melting of a solid body in a liquid, also affords a very striking example of the extreme divisibility of matter; when you sweeten a cup of tea, for instance, with what minuteness the sugar must be divided to be diffused throughout the whole of the liquid. Odoriferous bodies afford an example of the same thing. The odour or smell of a body is part of the body itself, and is produced by very minute particles or exhalations, which escape from odoriferous bodies, and come in actual contact with the nose.

When a body is burnt to ashes, part of it *appears* to be destroyed; the residue of ashes, for instance, is very small compared to the coals which have been consumed. In this case, that part of the coals, which one would suppose to be destroyed, goes off in the form of smoke, which, when diffused in the air, becomes invisible. But we must not imagine that what we no longer see no longer exists. The particles of smoke continue still to be particles of matter, as much so as when more closely united in the form of coals. No particle of matter is ever destroyed; this is a fact which must constantly be remembered. Everything in nature decays and corrupts in the lapse of time. We die, and our bodies moulder to dust; but not a single atom of them is lost.

It should be observed, that when a body is divided, its surface or exterior part is augmented. If an apple be cut in two, in addition to the round surface, there will be two flat surfaces; divide the halves of the apple into quarters, and two more surfaces will be produced.

Though divisibility is very often included among the essential properties of matter, chemistry teaches us that the ultimate elements of bodies are incapable of further division; yet they are material substances.

Inertia expresses the resistance which inactive matter makes to a change of state. Bodies appear to be not only incapable of changing their actual state, whether it be of motion or rest; but to be endowed with a *power of resisting* such a change. It requires force to put a body which is at rest in motion; an exertion of strength is also requisite to stop a body which is already in motion. The resistance of a body to a change of state is, in either case, called its inertia. In playing at cricket, for instance, considerable strength is required to give a rapid motion to the ball; and in catching it we feel the resistance it makes to being stopped. Inert matter is as

incapable of stopping of itself, as it is of putting itself in motion. When the ball ceases to move, therefore, it must be stopped by some other cause or power, which you will understand better after we have treated of the next and last general property of bodies.

Attraction is the general name under which we may include all the properties by which atoms of matter act on each other, so as to make them approach or continue near to one another. Bodies consist of infinitely small particles of matter, each of which possesses the power of attracting or drawing towards it, and uniting with any other particle sufficiently near to be within the influence of its attraction. This power cannot be recognized in minute particles, except when they are in contact, or at least appear to be so: it then makes them stick or adhere together, and is hence called the *attraction of cohesion*. Without this power solid bodies would fall to pieces, or rather crumble to atoms.

The attraction of cohesion exists also in liquids; it is this power which holds a drop of water suspended at the end of the finger, and keeps the minute watery particles, of which it is composed, united. But as this power is stronger in proportion as the particles of bodies are more closely united, the cohesive attractions of solid bodies is much greater than that of fluids. It is owing to the different degrees of attraction of different substances, that they are hard or soft; and that liquids are thick and thin. The term *density* denotes the degree of closeness and compactness of the particles of a body; the stronger the cohesive attraction, the greater is the density of the body, whether it be solid or liquid. In philosophical language, however, density is said to be that property of bodies, by which they contain a certain quantity of matter, under a certain bulk or magnitude. *Rarity* implies a diminution of density, thus we should say, that mercury or quicksilver was very dense fluid; ether, a very rare one. We judge of the density of a body, by the weight of it; thus we say, that metals are dense bodies, wood, comparatively a rare one.

Capillary attraction is an interesting variety of the attraction of cohesion. In tubes of small bore, liquids rise a certain height within them, from the cohesive attraction between the particles of the liquid and the interior surface of the tube. The smaller the bore, the higher will the liquid rise. All porous substances, such as sponge, bread, linen, &c. may be considered as collections of capillary tubes. If you dip one end of a lump of sugar into water, the water will rise in it, and wet it considerably above the surface of that into which you dip it. Capillary attraction probably contributes to the rise and circulation of the sap in the bark and wood of vegetables.

Attraction of gravitation differs from that of cohesion, inasmuch as the latter influences the *particles* of bodies at *imperceptible* distances, whereas the former acts upon *masses*, and at any distance, however great. Let us take for example, a very large body, and observe whether it does not attract other bodies. What is it that occasions the fall of a book when it is no longer supported? You will say that bodies have a natural tendency to fall. That is true; but that tendency is produced by the attraction of the earth. The earth being much larger than any body on its surface, draws to it every other, which is not supported.

Attraction being mutual between two bodies, when a stone falls to the earth, the earth should rise part of the way to meet it. But when, on the other hand, you consider that attraction is in proportion to the mass of the attracted and attracting bodies, you will no longer expect to see the earth rising to meet the stone. There are, however, some instances, in which the attraction of a large body has sensibly counteracted that of the earth. If a man, standing on the edge of a perpendicular side of a mountain, hold a plumb line in his hand, the weight

will not fall perpendicularly to the earth, but incline a little towards the mountain.

If the air did not impede the fall of bodies, attraction would make them all descend with equal velocity. It may be objected, that since attraction is proportioned to the quantity of matter which a body contains, the earth must necessarily attract a heavy body more strongly, and consequently bring it to the ground more rapidly than a light one. In answer to this, it must be observed that bodies have no natural tendency to fall any more than to rise, so that the force which brings them down, must be in proportion to the quantity of matter it has to move. Thus a body consisting of a thousand particles of matter, requires ten times the force of attraction to bring it to the ground, in the same space of time, that a body consisting only of a hundred particles does.

There are some bodies which do not appear to gravitate; smoke and steam, for instance, rise instead of fall, but it is still gravity which produces their ascent. The air nearer the earth being heavier than smoke, steam, or other vapours, not only supports these light bodies, but, by its own tendency to sink below them, forces them to rise. The principle is just the same as that by which a cork, if forced to the bottom of a vessel of water, rises to the top as soon as it is set at liberty. Balloons ascend upon the same principle, the materials of which they are made, are heavier than the air, but the air within which they are filled is considerably lighter; so that, on the whole, the balloon is lighter than the air which is near the earth, and consequently rises.

RISE FROM A HUMBLE CONDITION.

In a speech delivered by the Hon. and Rev. the Dean of Ripon, at a late soiree of the Mechanics' Institution, Leeds, a few passages occur worthy of being widely circulated:—

"I like to think with pleasure, and satisfaction, and wonder, of the extraordinary advancements which in the providence of God, particular individuals have made, who have just been able to apply the operations of their minds according as they were able to exercise them, and thereby to place themselves in extraordinary positions both in relation to their own prosperity and to the advantage of the country. It may be a very familiar subject, but it is one which I do like to think of, and I will just allude to it. There was a young man who was the youngest of thirteen children, and his father a very poor man; and the best his father could do with him was to apprentice him to a barber. In that humble and praiseworthy class of public life, that respected individual demeaned himself honorably, as long as he chose to continue in it. He then bestowed his care and enterprise upon preparing the beautiful hair of our heads—improving it to that degree that it should be fit to make a wig of. In that he excelled also. Then, gentlemen, he betook himself to a weed which I have seen, and which is a little more than like a weed—I mean the cotton plant of Carolina. He betook himself to the manufacture of cloth made out of that weed. He gained a great success, adding merely to the acquirement which he possessed—which you may suppose were slender—the knowledge which he could pick up by associating with his fellow-men, he gained that success which enabled him to decide the ware of the linen and the cotton, so that a vestment should be made all of cotton. The barber's apprentice, gentlemen, that honorable improver of our hair, for the purpose of a wig, was Sir Richard Arkwright, afterwards high sheriff of his county, and who left his family half a million of money. Well, gentlemen, I only put this as one instance of a simple, plain man, honestly following the call of Providence, using the mind according as God's Providence gave him the opportunity of drawing forth its resources—throwing himself into the opening which was

prepared for him, and thus gaining a prosperity exceeded by no man in this country; and I am sure that language is not equal to say the advantage which our nation has received from his invention, enabling him thus to show the benefit of the exercise of the mind, and talent, and energy and reflection, and desire for improvement in the humblest station of life. I will mention another case, because I do dwell upon it, I confess, with exceeding interest, from my personal acquaintance with the individual. Gentlemen, it is no more than forty years since, in my travels in America, I came to New York, and I called upon the famous Gen. Moreau, with whom I had the pleasure of being acquainted. He said to me, 'Well, here's a strange thing! here's a ship to go by hot water! and to-morrow the tria' is to be made, and I am invited to be of the party, and my friends. Will you go with me?' I accompanied Gen. Moreau in the first steam vessel that sailed on the Hudson, in America, under the auspices of Mr. Fulton, the inventor—a man of similar caste of Arkwright, perhaps with some greater advantages from early education, but of a similar tone and cast of mind; unsatisfied with what he had done, and what he could do, and always thinking that he could do something better, and thankful for every information he received, and every opportunity he could gain in making progress in some improvement; so that from a painter in portraits, from a designer in a variety of ways, at last he arrived at the extraordinary eminence and success of making the first practical steam vessel which could navigate so severe a river as the Hudson.

Now, gentlemen, I remember with pleasure standing upon the deck with Robert Fulton, and dwelling with him upon the subject. I remember asking him, "Do you think it will ever be of any good?" I recollect his countenance lighting up almost with indignation at the idea that any invention of his could fail of being useful. I remember very well, just as we approached the mouth of the Hudson, just as it sits on the Atlantic, saying—"What will become of us if we drift out to sea? How is it possible that a vessel of this sort can stand the waves of the ocean?" Well, now, gentlemen, when I compare and bring together that day, with the fact of the steamers now crossing the Atlantic in eleven or twelve days, with a regularity and precision which is always marvellous—why, how is it possible not to see and to be persuaded that there is not a man that lives, and comes within the arena of popular and scientific institutions like this, who has not an opportunity of being distinguished, by giving his talent, industry and energy, to whatever subject in the course of his investigation the finger of Providence may point out to him? It is impossible to say, unless we believe that we have arrived at the acme and fulfilment of everything for the good of man—it is impossible not to think that we may be conferring some great blessing upon our own country—that we may, through the means of some individual in the very humblest class, whose mind we may touch, by just giving him a perception and an intuition of combination connected with science and art—we may render him an instrument of great good to his country and the world, and a source of great happiness and pride to himself."

WASHING LIQUOR.—A correspondent who calls himself the 'Washerwoman's Friend,' says, 'There is now a washing liquor sold in Sheffield at the most extortionate price, beautifully labelled;' but for the benefit of washerwomen, who are generally the really deserving poor, we will impart the wonderful secret which has been obtained from head-quarters, viz., Mr. Twelveteens:—1 lb. of soda, 1-2 lb. of lime, and 1-2 lb. of soap. The soda and soap are boiled together, and the lime alone in two quarts of water; and then, after, being boiled, are used as required. The receipt can be as well manufactured by a poor washerwoman as by a scientific chemist.

Editors' Notices, &c.

PROFESSOR JOHNSTON.—We are indebted to the courtesy of Professor Johnston for a copy of his address delivered at Syracuse, to a portion of which, we have the pleasure of directing the attention of our readers, in the present number, and hope to find room for the remainder in our next.

A FRIEND TO CANADA is informed, that the matter to which he refers has for a considerable time engaged our attention. That agriculture is, and must for a long time continue, the staple interest of Canada, is a self-evident truth. We shall be happy to receive his co-operation, and will instance, for the present, one mode in which he, and others, may serve their country, by referring to the interesting and instructive reports from the Ottawa District, which appeared in our last number, and are completed in the present. We hope to receive many such from different districts, and feel sure that the directors of the Provincial Association will do everything in their power to disseminate the information through the province. We hope that, as political excitement subsides, the newspapers will do more in promoting this great object, and thus aid us in meeting the wishes of "a friend to Canada."

HORTICULTURE.—In reply to the expressed wishes of several subscribers, we beg to say that we have the promise of assistance from some practical gardeners; and that we shall be able to make our paper the medium of such plain instructions in this department, as are adapted to the wants of this country. We shall always be happy to receive hints or information bearing on the interesting pursuits of the horticulturist. We shall have some original articles on these subjects, before the season commences for practical operations.

W. F.—Guano, when pure, is a powerful fertiliser, but varies very much in its composition; it sometimes contains a large quantity of silica, or sand. We doubt whether it could be procured in this country at a price which would enable our farmers to use it profitably. For horticultural purposes, or limited applications, it may answer a good purpose. The seeds you mention have not, to our knowledge, been tried in Canada, but they would probably succeed well. These are matters which cannot be decided but by carefully conducted experiments; and our agricultural societies could not do better than to aid the progress of such trials and investigations.

AGRICOLA.—From your description, we think your soil must be deficient in lime. Your cultivation is too shallow, and you have not sufficiently varied your crops. Plough two or three inches deeper, and apply 100 bushels of quick lime per acre. The lime will not need repeating for several years.

H. K., Stamford.—The names sent by you are no doubt those of "good" persons, as you state, but we have adopted the principle and must rigidly adhere to it, of advance payments. We have lost so much already by the opposite system, that we have determined not to open any books, except with societies. If you make up the number to twelve, and remit us 3s. 9d. each, we will forward them at once.

D. K., W. Gwillumbury.—Your remarks on the use of lime are very good, but the theory of its operation has been often explained in our pages. If you have any facts to illustrate your theory we would willingly insert them. The other matter to which you refer is, we fear, some distance in the future. You say you are not a subscriber; why not become one? If you wish to encourage improvement, that will be one way of showing it.

MARKETS, &c.

There was a little more firmness in the British Corn Markets at the date of our last advices (Jan. 11th), but the stocks of foreign grain on hand were excessively large. Wheat and Flour, equivalent to 12 millions of quarters, it is said, was imported during the past year. The average price of Wheat in Mark-lane market, December 22nd, was only 38s. 9d. per quarter. Barley 25s. 9d. Oats 15s. 9d. Rye 22s. 9d. Beans 27s. 5d. Peas 28s. 11d. The autumn had been unusually favorable for wheat sowing, and a very large extent of ground has been cropped with the first necessary of life.

New York and Montreal markets are heavy for wheat and flour, as well as for provisions.

In Toronto but little business has been transacted. Wheat 3s. 9d. a 4s. 3d. per bushel of 60 lbs. Spring Wheat 2s. 6d. a 3s. 6d. Rye 2s. Barley 1s. 8d. a 1s. 10½d. Peas 1s. 6d. a 1s. 9d. Oats 1s. 2d. a 1s. 3d. Flour 18s. a 20s. per barrel.

The winter hitherto has been remarkably open and mild, with but little snow. The season for sowing wheat having been favorable last fall, the plant attained a vigorous growth, and we have not as yet heard of its suffering to any extent from exposure. The most critical time, however, has not yet arrived. Snow has fallen for some days past, and the weather is much colder, and sleighing good to the north of this city—February 7th.

IMPRESSIONS OF METALS.—A very easy and elegant way of taking the impression of medals and coins, not very generally known, is thus described by Dr. Shaw: Melt a littleisinglass glue with brandy, and pour it thinly over the medal, so as to cover the whole surface; let it remain on a day or two, till it is thoroughly dry and hardened, and, then taking it off, it will be fine, clear, and as hard as a piece of Muscovy glass, and will have a very elegant impression of the coin. It will also resist the effects of damp air which occasions all other kinds of glue to soften and bend, if not prepared in this manner.

THE SALE OF ARSENIC UNNECESSARY.—There exists no earthly reason why a law should not go forth to-morrow, forbidding at once and for ever the retail sale of arsenic in this country. Arsenic is asked for to kill rats, mice, bugs, and other vermin; to form a solution for steeping wheat in before sowing; for dressing scabbed sheep; and for preparing the skins of birds for stuffing. The destruction of rats and mice, says Dr. Ure, is more effectually accomplished with the German poison, made of phosphorus and lard, with this great advantage, that upon eating it the animals immediately go in quest of water, and die away from the olfactories of the family. The same gentleman stated that arsenic will not kill bugs, and that camphire will. Dr. Ure and Dr. Tunstall agree that, for steeping wheat, arsenic is far inferior to the sulphate of copper, which is used extensively on the Continent, and that its continued employment for that purpose is as barbarous in science as in practice it is unsafe. Medical jurisprudence, said Dr. Tunstall, has demonstrated that arsenic, applied to an abraded or ulcerated surface, is absorbed, and finds its way to the stomach as certainly as if it entered by the mouth, while agricultural experience reveals that death from unknown causes is a very common occurrence among sheep to which arsenical dressings have been applied, and it is prudent to suspect the presence of the poison in the animals slaughtered for human food, which have undergone this treatment. The skins of birds may be dressed with corrosive sublimate. In resuming his opinions, Dr. Ure said, "I am quite sure that arsenic is not of any use for the purposes for which it is commonly sold by chemists and druggists."—*Scottish Agricultural Journal.*