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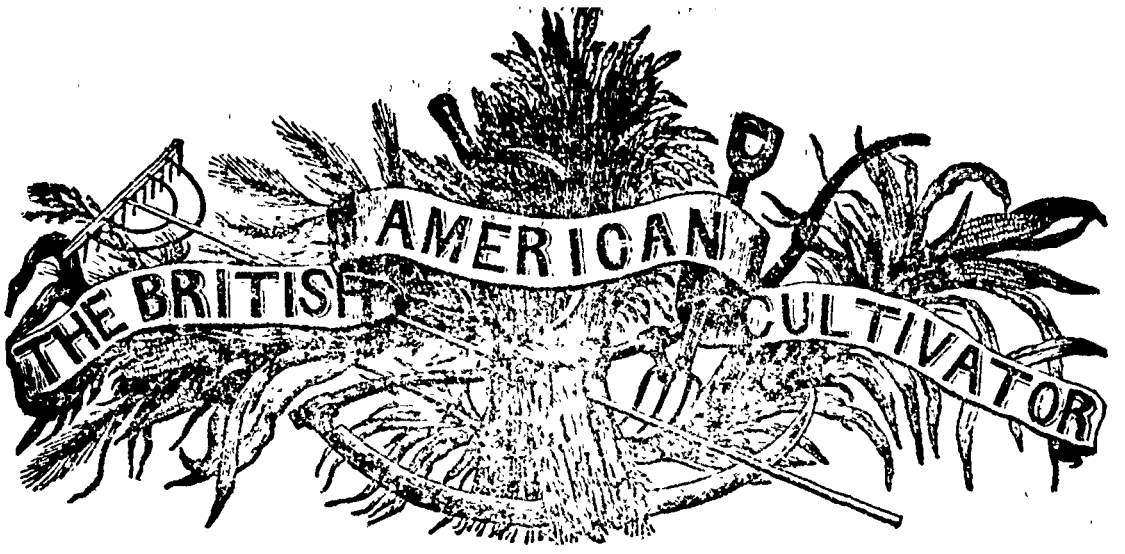


"Agriculture not only gives Riches to a Nation, but the only Riches she can call her own."

NEW SERIES.] TORONTO, NOVEMBER, 1845. [VOL. I.—No. 11.

THE operations upon the land may now be considered completed for the present season, and any advice that we have to give in relation to agricultural operations will have a direct reference to the science, and not to the practice of agriculture. In the future management of this journal we purpose to devote a considerable space in the numbers we issue during the winter months, to topics that will be likely to have a tendency to stimulate our agricultural readers to improve their minds, by which means the character of their profession may be greatly enhanced in their own, as well as in the estimation of oth ers. Agriculturists, owing to the important position they occupy in sustaining civilzed society, ought at least to have a preponderating influence in the management of the affairs of the nation. It will be in vain to expect that the farmers of this colony will exert the influence that their noble calling would seem to warrant, upon the measures of Government, so long as they remain an uneducated portion of the community. We therefore would beg to remind our friends that this is the proper period to take steps to impart instruction to the rising generation. The Common Schools may truly be said to be the nurseries in which the farmers' sons and daughters complete their education. There never was a period in the history of this country when an equal amount of encouragement was given by government towards the support of Common Schools, and we hope that no one will be backward in sustaining those useful establishments in a manner that will be in keeping with the influence that such institutions should exercise upon a free people. It will be impracticable to impart a good Common School education to the youths of this country, unless efficient teachers be employed. The reason why so few of this class are to be met with, may be attributed to the fact, that the small salaries paid to teachers, is not a sufficient inducement to influence young men of talent and superior acquirements, to engage in this highly responsible calling. It is not our province to dictate the amount of salary that should be paid to teachers, but we

do not hesitate to say, that the standard of Common School Education can only be measured by the efficiency of the teachers employed to impart instruction to our youths, and that it will be useless to expect that well qualified persons will engage to take charge of our schools at a less salary than persons of similar attainments receive as clerks in the mercantile trade, and in the several public offices in the country. It is a most difficult task for a person who holds the office of instructor, to impart a branch of knowledge to others which he really does not understand himself. This idea holds strictly true with the school teacher; and in a country like this, where time and money are nearly synonymous terms in point of value, it is of the utmost importance that such only should be employed as have a thorough knowledge of the English language, and the branches of learning usually included in a sound and practical English education. A youth between the age of seven and fourteen years will receive more instruction from a well qualified teacher, such as we have attempted to describe, than an other youth of equal ability would acquire between the age of seven and twenty-one years, from such teachers as may be met with in almost every township in Canada. If this be true, which no one will venture to question, then the seven years that the latter youth would have to spend at school, to make him equally qualified with the other, would have the very injurious influence of weakening his intellect, and worse than all, he would feel the inferiority of his capacity, when in the company of those who had the start of him in the race of acquiring knowledge, by being placed under the instruction of men of superior attainments in learning. We might multiply arguments in favor of the interesting theme of education, but to a discerning mind it must be obvious that the success of agricultural improvement greatly depends upon the stand that is taken by the rural population in sustaining their educational institutions. Agriculture is the foundation, or rather mainspring of all our greatness as a colony; and by imparting a practical education to the rural population, the varied and extensive resources of the country would shortly become developed, which would bring into being sources of wealth that the colonists at present have no idea of. Long evenings and stormy days can be profitably employed by farmers in acquiring useful instruction; but few classes are less disposed to obtain information from books, of a character which illustrates the principles of their business, than the agricultural—why this is the case it is most difficult to conjecture—because no branch of studies is more interesting and instructive than that of the science of agriculture; and but few, if any, can be turned to greater account when practically applied. Before the agricultural community can be expected to have acquired a taste for reading an exposition of the principles which comprise the theory of agriculture, they must first accustom themselves to read the details of the best systems performed in various countries, and upon different soils, and especially of those most successfully practiced in their own country. The cheapest method yet devised to widely diffuse agricultural information, is through the medium of agricultural newspapers. This simple, and at the same time effectual means of bringing about an agricultural reform, has been attempted during the past few years in this highly favored agricultural country. It is true that a fraction of the farmers have availed themselves of this cheap method of acquiring valuable knowledge; but it is not sufficient that only about one in a hundred of the agricultural population of Canada should receive benefit from the agricultural press. If knowledge be useful to a few, why not equally so to the many? The best farmers in Canada constantly receive an agricultural paper published in their own country; and from this journal they have no doubt received ten times the value of its subscription price. If such a journal is appreciated by the best practical farmers, why should not those who have much more need of instruction feel equally interested in its success? We leave others to answer these questions, and would merely add,

that here is a journal published in a language that all can read and understand, which is afforded for the very low price of two pounds ten shillings for twenty copies—each copy containing three hundred and eighty-four pages—*being only two pence halfpenny for a number containing sixteen pages of closely printed agricultural reading.* Only two pence halfpenny! for an amount of agricultural reading that is worth to any farmer who would take the pains of reading, understanding, and practicing its details, more dollars than it would cost him in pence. Farmers who are opposed to book knowledge, listen to the following fact: Here is a source presented to your view, of profitable investment, whereby you will realise pounds for pence.

We have branched out in the foregoing remarks, with the intention of recommending our Agricultural friends to devote a portion of this month in giving a more extensive circulation to the *British American Cultivator.* It is now, when the wholesale price is considered, the cheapest Agricultural Journal published in the English language. We venture the opinion, that the same amount of agricultural reading cannot be had, in any country, for the money. Those of the friends of Canadian Agriculture who have aided us in establishing the *Cultivator,* are no doubt aware, that we have not yet received a farthing for the first four years' service; that we have toiled in the cause we have had so much at heart, and that we have sustained a direct loss of £500 in cash, in keeping the work before the public A less circulation than 10,000 copies at 2s. 6d. each, for such a Journal as the *Cultivator,* would not make it an object worth devoting a large share of a well qualified Editor's attention. This circulation will not be had until the expiration of other four years, unless it increases at a faster ratio than it has done heretofore. If each of the present subscribers would devote one week in extending the circulation of the *Cultivator* it might be increased to more than 10,000 copies. It has now been a long period since any appeal has been made to the readers of this Journal; nor do we mean this for one, because the present circulation covers the actual expense of publishing; but we feel anxious to devote a large share of our time in its management, and also desire to visit the best farmers and report fully their several methods of cultivation, which would greatly encrease its value in point of usefulness; we also desire to illustrate many of the subjects upon which we treat, with valuable and costly engravings; but to do all this, we want the 10,000 regular paying readers, at the small price of only *thirty pence* annually, each. How the above number of subscribers are to be had, is, after all, the question. The method by which they may be obtained, we shall now propose. We ask as a favour, each of our present subscribers, to devote only a small portion of this month in canvassing the settlement in which they reside, for subscribers to the *British American Cultivator;* or, which would still be better, both for the interest of the Journal and the cause of Agricultural improvement, to solicit members to the District, County, Riding, or Township Agricultural Societies, as the case may be, who shall each be supplied with the current volume of the *Cultivator,* upon the payment of One Dollar subscription to the Society. For this extraordinary general canvass in favour of Canadian Agricultural improvement, we propose in payment, the following extra performance on our part: when we have good evidence that our patrons have acted upon the above suggestion, we shall then, Providence permitting, bend our whole energies in the conduct of our Magazine, by which means it will be made, nearly, if not altogether an original work, being what its title page would indicate—a true transcript of the condition of British American Agriculture; and in addition to this we shall employ costly engravings to illustrate the Improved Agricultural Machinery that are of modern discovery, as well as of a variety of other branchas of Agriculture, which would altogether greatly enrich the value of our Journal, so that it might at least favourably compare with any similar work published on this continent. To do our part of the task, would require the whole of our disposable time; and besides, we would be subjected to a vast amount of extra anxiety and care; the patrons, on their part, would only have to spend a few hours, or days at the most, in calling upon their neighbours, and pressing upon their attention the importance of Agricultural Journals and Societies, being patronized by every well wisher to the country, and when ten or fifteen, or twenty subscriptions are obtained, the small sum of 2s. 6d. each will have to be transmitted to the Publisher, and then their part will be performed. The support which should be given to schools, and the part which the farmers and others should take in the advancement of the cause of Agriculture, have been here submitted as subjects worthy the attention of all classes, during this and the other winter months; and we trust that the few hints that have been dropped, will be received by the public in a generous spirit, and that every true Canadian, will heartily co-operate in moving forward the Car of Knowledge.

We have a few thousand full sets of the current volume of the *Cultivator* on hand, and with a trifling effort on the part of each of its present supporters, they might be disposed of to the great advantage of Canadian Agriculture

REPORT

Of Messrs. W. G. Edmundson and Joseph Hartman, whowere appointed as a Committee by the Fourth Riding of York Agricultural Society, to visit the New York State Agricultural Society's Exhibition held at Utica on the 16th, 17th, and 18th of September, 1845.

Your Committee in accordance with their instructions, attended the late Cattle Show and Fair of the N. Y. S. Agricultural Society held at Utica, and took notes of snch parts of the proceedings as in their opinion were calculated to benefit the Canadian Agriculturists, which they submit, together with a few pertinent remarks, for your consideration, at as early a period as circumstances would admit.

The weather throughout the three days of the exhibition was most propitious, with the exception of a smart shower about five o'clock of the last day, which obliged the several Committees to read their reports in one of the business rooms, by reason of which circumstanee the mass were deprived of hearing this very interesting part of the performance. The number of visitors on the ground during the second and third days, was supposed to be from sixty to seventy thousand; and we take equal pleasure in stating, that notwithstanding the great crowd, not a single instance of disorderly conduct came under our notice or within our knowledge.

The exhibition of stock was considered, by distinguished judges, to be the best ever witnessed in New York; and according to the best of our information, the number of four-footed beasts may pe put down as follows:—48 Durham Cattle, 11 Herefords, 9 Devon, 4 Ayrshire,—72 in all of British breeds:—37 Grade, 21 Native, 124 Oxen, 12 Steeds, and 8 Fat Cattle, making in all 274 Horned Cattle.

Of Horses 114 in all, viz:—29 Stallions, 36 matched, 7 Geldings:—32 Mares and Foals, and 10 Yearling Colts and Fillies.

Of Sheep there were 64 Long Woolled, 112 Middle Woolled, 58 Merinos, and 23 Saxonies. These numbers of the different varieties were entered for competition, but not all exhibited on the ground,—as not more than one-fourth of the numbers of long and middle woolled sheep entered were on the ground for exhibition. To the above kinds, adding 34 Swine, there was a grand total of 679 four-footed beasts at the Cattle Show.

In addition to the Cattle Show, there was a Ploughing Match, an exhibition of Poultry, of Farming Implements, of Dairy Productions, of Maple Sugar,—of Damestic Manufacture Woollen, Linen, Cotton, and Silk Goods,—of Fruits and Flowers, of Vegetables, of Flour, and of Cooking and Parlour Stoves,—and besides these several departments, there were sixty-five discretionary premiums awarded for such articles of merit (not enumerated in the previously published list,) as were exhibited by the enterprising inhabitants of the Empire State.

The amount of Premiums awarded equalled $3000, and the fees collected at the gates and in the business office of the Society, exceeded $4300, so that the funds of the N. Y. S. Agricultural Society were increased rather than diminished by this exhibition.

In reporting the most interesting details of this unrivalled exhibition, your Committee purpose to treat each particular in a style most likely to be acceptable to the friends of agricultural improvement in Canada; and at the same time they shall endeavour to give a correct and impartial history of this unrivalled exhibition.

Durhams.—The pure blooded animals of this breed did not equal our expectations; indeed there was not a Durham animal on the ground, that would equal a number of the best bred Durhams we have seen at our Agricultural Shows in Canada. The few Grade Durhams shown were decidedly superior animals, and furnished ample evidence, that, for grazing purposes at least, this justly esteemed breed of Horned Cattle are well adapted to improve our native stock.

North Devons.—Both thorough-bred and grade animals of this breed are deserving of high consideration; in fact it would be difficult to say too much in their praise, especially of the animals exhibited by H. N. Washbon, of Butternuts, Otsego County N. Y., and those of E. P. Beck, of Sheldon, Wyoming County.

Mr. Washbon's stock of pure Devons consists of 40 head, and Mr. Beck's of nearly a like number. No animals in our opinion, combine the working, the dairy and the grazing qualities, to the same degree, as do the improved North Devons; and to judge from the superior race of animals that are to be found in New England, which owe their origin to this particular breed, we should be inclined to the opinion, that none of the British breed of Horned Cattle would at all

compare with the Devon's as a stock for improving the native cattle of Canada—especially where oxen for the yoke are in good demand.

Herefords.—The few animals of this breed that were on the ground were of a superior kind, and in our judgment highly bred; and where cattle are wanted almost exclusively for grazing they would doubtless prove a valuable stock, but for working oxen and milkers they are inferior to other improved British breeds.

Ayrshires.—Of these there were only four animals, all of which appeared to have the marks of pure breeds,—the cow especially attracted our attention, inasmuch as she gave tokens of a very extraordinary milker, a quality which the Ayrshire cow is in possession to a very high degree.

Horses.—The display of horses was very beautiful; brobably surpassing any previous exhibition of the society. There were upwards of 30 stallions on the ground, besides a large number of matched horses, and mares and colts.

Hogs.—Berkshire hogs appear to be no longer admired by the American breeder. We saw none at the fair that gave evidence of good breeding, except an aged boar. The improved Leicesters are generally preferred at the present time; but unless more discretion be observed in crossing with this breed than was with the Berkshires, they will prove of equally short celebrity; they are, however, a larger race of animals, and so far as merit on this score goes, they will undoubtedly improve the present degenerated race of Berkshires.

Sheep.—The long woolled sheep which chiefly consisted of grade Leicesters and Merinos, and grade South Downs and Leicesters, were not equal to the grade Leicesters that may be seen in almost any of the farm-yards of the Home and adjoining Districts. We saw only one pure bred Leicester, and two South Down Rams, all of which were good of their kind, but not equal to rams of the Leicester breed that are to be seen at the Agricultural Shows in Canada. The Merinos, or fine woolled breed, as much exceeded our expectation as did some of the other departments of the show fall short of equalling it. We went to the fair prejudiced against them, and returned entertaining most favorable impressions in relation to their profitableness for the farmers of Canada West. With our present opinions of improved Merino sheep, we think those of the farmers of this country whose tastes and circumstances would warrant them to engage in the business of wool-growing, would do well to turn their attention to improving the wool of their sheep, by crossing with the hardy breeds of Merinos. The wool of this breed is worth, in our market, from 2s. to 2s. 6d. per lb., and a three years' old wether will clip from five to six lbs.; and a flock of ewes and weathers will average three and a half or four lbs. each, of a very superior article of fine wool. Three Merinos may be kept upon the same feed, in equally as good condition, that would be required to keep two Leicesters; and in those districts where mutton bears only a small remunerating value, it would certainly be wise for such farmers to pay some little attention to improving the quality of the wool of their sheep. Merinos crossed upon the Leicesters improve the wool to a much greater degree than they decrease the value of the carcass; and by judicious crossings we see no reason why both objects cannot be obtained, and by the accomplishment of which, sheep-husbandry would become an important branch of Canadian husbandry. It is supposed by the majority of the farmers of this country that the Merino breed of sheep shear a light fleece, and will not endure a severe winter as well as the long-woolled breeds; these views, however, we have confidence in believing, will be changed when they become better acquainted with this particular breed of sheep.

Poultry.—Of these we might mention the celerated Dorking Fowls, Black Polands, Muscovy Ducks, Wild Turkeys, African Geese, and a lot of large fowls, owing to their extraordinary size, designated the ostrich variety. This department of the show being novel to us, attracted some little attention and interest. There were seven competitors; and we noticed that one gentleman exhibited eleven varieties of hens, two of turkeys, three of ducks, and three of geese; and another nine varieties of hens, two of turkeys, two of geese, two of ducks, and twelve of pigeons. The improvement in the breeds of poultry, was highly creditable to the gentlemen who competed for the prizes.

Fruits.—Notwithstanding the unfavorable season, the show of fruits altogether surpassed any thing of the kind we have seen,—a full description of which would occupy more space than the limits of an ordinary miscellaneous report would admit. No one could have seen the great display of choice fruits without forming the resolution to improve in this particular, and we believe there

were no specimens exhibited but such as can be had in the principal nursery establishments in the union, at a very moderate rate.

Butter.—The specimens of butter, which were principally in large firkins, were of a very superior quality, being equal, if not superior to the best qualities of this article we have heretofore met with.

Cheese.—Of the many thousand visitors that were at the Fair, we venture to say that all were delighted with the display of cheeses. They were divided off into classes, according to their respective weights, and to judge from appearances, we might safely put down the gross weight at six tons. The best lots were exhibited by a *combination of farmers* of Herkimer County, who manufacture some scores of tons annually, exclusively for the British Market. The Canadian farmers might here learn a lesson to their advantage, by following this noble example set them by their neighbors. The farmers of this country should now reap the advantages which accrue to the American farmers, by supplying the British Market with cheese. The Canada market must, however, be supplied with Canadian cheese, before any thought need be taken to supply the markets of the mother country. All that is required to make this an important branch of Canadian husbandry, is skill; of this there is an abundance both in Great Britain and in the United State , and we venture the opinion that those who engage in this new business, will find it to their advantage to employ experienced dairy-men from Herkimer County, or if they can be had, from some of the best dairies in England.

Maple Sugar.—There were a number of lots of Maple Sugar exhibited, all of which were equal to the best crushed loaf. Persons unacquainted with the process of purifying brown sugar would scarcely credit that the specimens such as we allude to, were manufactured from the juice of the maple. The methods of clarifying practiced by the successful competitors, were given in full in the early number of the current volume of the *British American Cultivator.*

Domestic Manufactures.—The manufacturers and ladies of Utica and surrounding country excelled in exhibiting articles of domestic manufacture. The articles exhibited consisted of woollen blankets, flannel, woollen cloth, woollen carpets, Brussels carpets, rug carpets, kersey, double carpet coverlet, knit woollen stockings, linen cloth, linen diaper, hearth rugs, linen sewing thread, linen knit stockings, silk stockings, cotton stockings, and a variety of other articles, which proved as attractive to the citizens of the towns and cities, as did the Cattle Show to the rural population. It was estimated that the number of ladies on the ground equalled at least 12,000.

Ploughing Match.—The number of entries at the ploughing match were twenty. The task for each was one quarter of an acre, and two hours the time allowed to perform it. Some of the work was tolerably well executed, but on the whole it would not have met the approbation of a British ploughman. The furrow slices were six inches deep, and from twelve to fifteen wide; and in the main, turned perfectly flat. The ploughs were short in the handles; and in their general construction did not appear calculated to turn a well-proportioned furrow. The ploughmen have rather an imperfect idea of the best method of forming ridges, and in taking up the two last furrows; they were so deficient in the latter particular, that among the twenty competitors, there was not a single individual who attempted to finish his work. There was a space of unploughed land left between each allotment, which to us appeared rather a novel method of disposing of this the most intricate part of the work.

Before we left the ground we offered to plough a native-born Canadian youth of only 16 years of age, against any native-born American that could be produced. We made this challenge not through any desire of competing for a wager, but merely to convince our American friends that their whole system of ploughing, at least, so far as scientific principles are concerned, are radically deficient. The conclusion we have come to on the subject of American ploughing is, that they are as far behind the Canadian farmers of the Home and adjoining Districts as the Canadian farmers are behind them in the manufacturing of cheese.

Agricultural Implements.—The implements of husbandry exhibited were mostly of a superior quality, and to us the most interesting part of the show. There were quite a number of labor-saving machines on the ground,—a few particulars in relation to each would no doubt prove highly interesting:—

Hussey's Reaping Machine.—This, probably, is the most efficient implement yet discovered for cutting wheat, rye, oats, and barley; and the principles upon which it is constructed is so simple, that it requires but a small amount of mechanical skill to construct it. The whole cost need

not be more than £12 10s.; and when its remarkable power for cutting grain is taken into the account, this would be considered by competent judges to be one of the cheapest agricultural implements in use. This machine is not only simple in its construction, and labor-saving to the extreme, but is as durable, with ordinary care, as the plough, axe, or spade. To give some idea of the great utility of the Reaper, we will here mention a few particulars. This machine, with the aid of a pair of horses, a man, and a boy, will cut in a most perfect manner, in a day of ten hours, twenty acres of heavy wheat. Considerably more than this have been done per day, but the average may be safely put down at fifteen acres. The cost of cutting an acre of wheat at this rate, allowing 10s. per day for the man and horses, and 3s. 9d. for the boy who rides, and 5s. for wear and tear of machine, would only be fifteen pence. Hussey's Reaper has been extensively employed in the Southern States the past harvest; and it is the opinion of all who have employed it, that it will save at least one bushel per acre over any other method yet invented for harvesting grain.

The conclusion of this report, will appear in the December number of the *Cultivator*, which will embrace a brief description of the machinery exhibited at the Fair, an outline of the constitution of the New York State Agricultural Society; a brief history of the rise and progress of agricultural improvement in the Empire State; and a few leading features of a plan for advancing agricultural improvement in Canada.

ENCYCLOPŒDIA OF DOMESTIC ECONOMY.

The Messrs. Harpers have issued the XIth number of this valuable work. It is one of much interest to farmers, being devoted to the construction of stables, management of horses, making butter and cheese, rearing poultry and bees.—In this number commences the department on the Preservation of Health, and Domestic Economy. We cannot withhold from our readers the following:

Health in infancy and childhood will always form a consideration of deep interest to parents. Their earliest solicitude must always lead them to seek the means of developing in fair proportion all the infantile powers, bodily and mental, of their offspring. These means are comprehended in the term "good nursing," or, in medical language, "physical education." Maternal attention and foresight should ever be directed to this subject; for 'bad nursing,' the mismanagement and neglect of the bodily powers of children, is often the foundation of diseases in infancy, which leave permanent effects in the constitution, or bring forward diseases which might otherwise have always remained latent, thus blighting all the enjoyments of life that result from good health: besides which, so connected are all the physical, intellectual and moral systems of human nature, that in no individual can one of them be impaired without danger to the others. The wisest system of education may never be sufficiently effective to eradicate the evils of "bad nursing."

If any of the following details and observations appear applicable chiefly to the affluent conditions of life, or comparatively useless to whom pecuniary considerations would restrict in their domestic arrangements, still there will be found suggestions of a general description applicable to the common nature of childhood—suggestions which may serve for any sphere of life in which sensible, active mothers devote themselves sufficiently to their maternal duties. Such mothers may bring up as fine, healthy, happy children as the most expensive appointed nursery can display; and even more so, for luxury and indulgence are not in themselves at all favorable in their influences over childhood.

Children, under all ordinary circumstances, may be brought up in the wholesome habits of cleanliness and activity; may be taught self-restraint in regard to food; may be encouraged in cheerful and enlivening pursuits; their minds may be awakened to useful observations, even by the simple exercises essential to the developement of their bodily organs. These are the principal influences promotive of infant health and vigor; and by these a merciful Providence has rendered the welfare of childhood independent of the gradations in wealth and rank that are caused by the varying circumstances of civilized life. Thus mothers employing wisely the means of good nursing which nature entrusts to all alike, may look with indifference, as mothers, on the useless appendages and luxuries with which they may be unable to surround their children: may they not also rejoice, if, while their condition denies their children privileges which affluence might yield them, it also screens them from snares and temptations most fatal to their best interests.

Corn Solvent.—Pearlash (dried), 1 part; water, 2 parts. Mix. Apply with a rag.

Indian-Meal Cakes.—To three pints of Indian-meal, a piece of butter as large as an egg, and a tea-spoonful of salt. Put two tea-cupsful of boiling water, stir it in, then add three eggs, and milk to make it to the consistency of batter. Half a tea-spoonful of saleratus.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

ANNUAL MEETING AT SHREWSBURY.

The farmers of this country can scarcely conceive the favorable influence that the Irish, Scottish and English National Agricultnral Societies have in improving the character of these three great divisions of the British Empire. Without such institutions the mother country would become dependent upon other countries for the principal share of her breadstuffs, and with them she may ultimately hope to supply all the staple agricultural products required for home consumption. These institutions, together with their auxiliaries, are liberally patronised by the government, the landed aristocracy, and the intelligent portion of the tenant farmers, and not a few have become so wealthy, that the yearly interest accruing from invested stock is abundantly ample to meet the annual demands against the institutions. The great success which has attended the exertions of the British Agricultural Societies, has had the effect of influencing every other nation in christendom, to charter similar institutions; and there now truly appears to be a laudable spirit of emulation manifested by the great corn-growing nations of the world, to ascertain which can produce the comforts and luxuries of this life in the greatest abundance and at the cheapest rate.—Facts like these presented to view, it is to be hoped will have the effect of stimulating the Canadian husbandmen to improve in their agricultural operations, so that it may no longer be said that this country is behind the age in general improvement. Our present object in calling attention to this subject is, to mention a few of the leading improvements effected in England within the past twelve months in the several descriptions of agricultural implements, as exhibited at Shrewsbury, at the late exhibition of the Royal Agricultural Society of England. We are indebted to the Editor of the *English Agricultural Gazette* for a voluminous report of the above meeting, and for the information of our readers, we glean the following particulars.

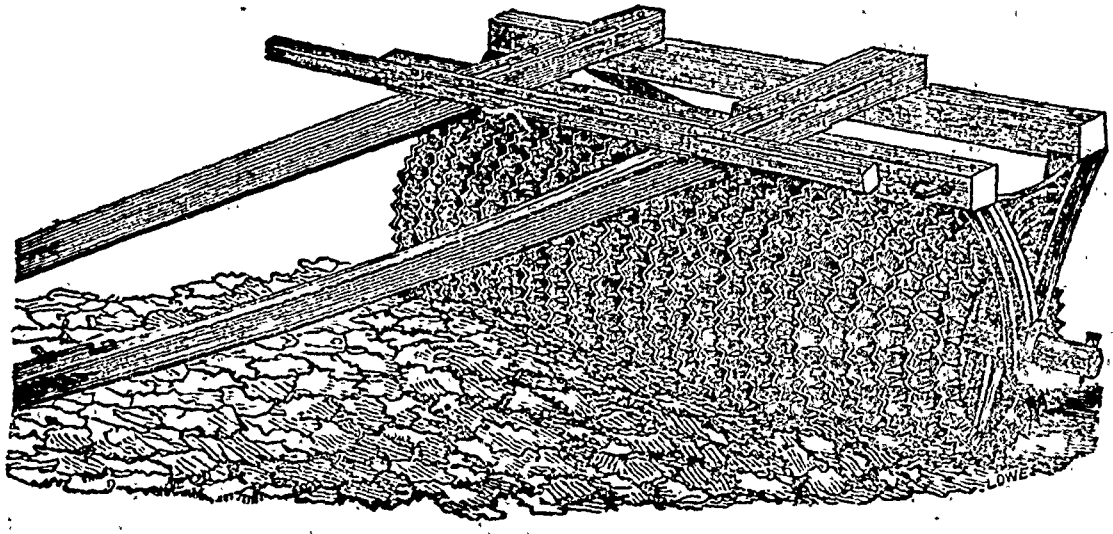
Chaff Cutters.—One of those implements was exhibited by Mr. Joyner, of Aveley-hall, Romford, Essex. The knives of chaff-cutting machines consist commonly of short and slightly curved blades, attached to the arm of the fly-wheel near the axis; so that when they are brought around by the revolution of the wheel upon the straw, or other substance supplied by the feeding rollers, they operate on it with a sort of chopping action, which not only prevents their cutting well, but causes a shaking of the machine, which puts it soon out of working order. But in this implement the knives are made of a scythe like form, and much longer than usual, and are attached to the periphery, and at such a distance from the axis, as well as in such positions in regard to the feeding-rollers, that they come down upon the straw or other substance to be cut, with a long sweep and continuous shearing action, whereby the machine is said to perform not only a greater quantity of work in a given time, but at much less cost in point of wear and tear.

Dibbling Machine.—The next implement to be mentioned is Mr. Newberry's Seed Dibbling Machine, which is now favorably well known in England. From the numerous reports that we have read in the English agricultural press, in relation to this implement, we are ready to conclude that is the most perfect machine for sowing grain in drills that has as yet been invented.—We hope that some one in Canada will take steps to introduce one in this country, so that they may be constructed here, and brought into use in the most extensive wheat-growing districts. It consists of a series of wheels, each dibbling a separate row, and the construction of which may perhaps be understood from the following explanation: Imagine a wheel whose spokes project three or four inches beyond its rim—if such a wheel were rolled along the ground, it would dibble holes in a row as it went. The box and spokes of this wheel are hollow, and each spoke is divided longitudinally into two halves, one of which is fixed, and the other is moveable, its surface, where the spoke is divided, sliding over that of the other. Imagine that, by an arrangement acting in connection with the motion of the wheel itself, the moveable half of each spoke, as soon as the latter had dibbled its hole, should be dibbled an inch; the end of the tube down the middle of that spoke would thus be opened, and any seed in it would drop into the hole just formed. This is the mode in which the implement acts—a feeding arrangement for placing two or three seeds in each spoke before it acts as a dibble, being attached to the parts just described.—The price of the five-rowed dibbler is £60.

Mr. Robinson, Lisburn, County Antrim, exhi-

bited his *Churn*, which has been highly spoken of. The churn is of an oblong or oval form, divided into two unequal parts, lengthways, by a partition. In the largest division, the blades or flyers are placed, less than one half immersed in the milk or cream, and covered over similar to the paddle and box of a steamboat. The other, or smaller division is open or uncovered, and in which is placed a sluice, as hereafter described. By turning the handle, or fly-wheel, the blades or flyers are put in motion, which, acting on the cream, sends it round and round the churn in a continuous and rapid stream, the partition before mentioned being so contrived that it admits the cream to pass round in a current, so that every particle is successively and repeatedly beaten or churned by the flyers. In much less time than is required by other machines, the cream is broken and butter formed; and, by a very simple and effective contrivance, the butter is prevented from passing again under the flyers, by means of the sluice, which, being pushed half way or so into the fluid, the butter, as it floats, is stopped, and easily collected; by this arrangement the milk is gleaned of every particle of butter, and the produce is thereby increased at least at the rate of half-a-pound to 24 gallons of milk—a quantity sufficient in a short time to pay the expenses of the machine, independent of the superior quality and saving of labour. On the latter point, this object is fully attained, by the construction of the blades, and their position with respect to the fluid being less than half immersed in it, so that when the cream is once in motion, it is easily kept up. Another advantage arising from the arrangement is, that the spindle being above the level of the fluid, a light joint is not necessary; the friction is therefore, greatly lessened. Price £3 10s.

Mr. Crosskill, of Beverley, exhibited his valuable *Clod Crusher*, which the experience of the few years during which it has been at work, enables those who have employed it to describe as a most effective and useful implement. The division of the cylinder is in this implement carried to an extreme; so that, in fact it consists of 23 wheels all working freely on the common axle—these wheels are toothed. This implement would prove of great benefit in the extreme clayey districts of this country; and in the hope that it may shortly be introduced, we have procured at considerable cost, the accompanied engraving.



Mr. Clyburn, manager of Lord Ducie's works, exhibited his patent *Threshing Machine* at work. This machine consists of a revolving cone or beater enclosed in an outer fixed concave case; the outer case is open work; the corn is fed in at the smaller end of the concave case, and (by the difference in the velocity between the large and small end of the revolving cone or beater,) the straw is carried rapidly to the larger end and discharged. The grain as it is separated from the ear, is thrown through the trellis or open work, so that a complete separation takes place The wind caused by the revolution of the beater is brought to operate upon the threshed grain, and blows out the greater portion of chaff; thus, at one operation, the threshing and first winnowing is performed. The machine is driven with an improved horse-power, and is portable; it con-

sists of an iron frame, which carries all the wheel-work, and the starts are fastened into recesses made for that purpose upon an internal iron tooth-wheel, which prevents any unnatural stress upon the spindle or any part of the frame. As a proof of its correctness when at work, it makes no noise; the threshing part can be driven by horse, steam, or any other power. This machine has had several improvements made in it since last year, one of which is an improved shaker, which completely separates the corn from the straw. Price: Threshing-machine, £80; shaker, £35.

This threshing-machine as it was at work in the yard had Mr. Clyburn's winnowing machine attached to it, and the corn was delivered from it very clean. The fan or blower of this winnower is about 3 feet diameter at its greatest radius, and 2 ft. 6 in. at the smallest, with the fans 4½ inches wide, and placed at an angle of forty-five degrees; so that when put in motion the wind enters at the smallest side and is driven out at the largest, filling a space or chamber 3 feet square with wind. The riddle is placed in the middle of the chamber with a vibrating motion, having a small hopper underneath it, which moves with it, the large hopper and feed roller being at the top of the wind chamber. As the grain with the chaff in it drops from the feed-roller to the riddle, it meets with the wind from the upper side of the fan, which blows out the chaff before it gets on to the riddle. The grain after passing through the riddle is concentrated together in the small hopper that moves with the riddle: when it leaves the hopper, it meets with the wind from the lower side of the fan, which drives the light grain farthest from it into a spout provided for that purpose, leaving the heaviest and best to fall down upon a screen which separates from it any seed that may be left. One of the great improvements in this machine is making the fan of such a form that it will give a greater degree of wind for the grain to fall through than in any other machines: another great improvement is its having one of Hornsby's registered feeding apparatuses attached to it. Price: with Hornsby's feeder, £17; without ditto, £15.

Mr. Viago, of Penzance, exhibited his Seed Planter. It consists of six pressing-wheels and three carrying wheels; it will, with great dispatch, deposit any kind of grain or seed, at any distance, in any number of grains, with the same uniformity as if done by dibbling. It also possesses the advantage of covering the seed at the same time. The price varies with the size: six rows, £27. The principle on which it acts differs, as far as we know, from that of any other machine of the kind. The seed is contained in a box, having a double bottom of sheet metal, one fixed, and the other moveable—sliding over the first. Both of these are pierced with holes, but it is only when the holes of both coincide, that the seed can escape; and it is upon the regular recurrence of these coincidences that the regularity of the sowing depends; and it is upon the length of interval occurring between these coincidences that the thickness of sowing depends.

We have given the address of the parties who exhibited the above implements, in the hope that some of the Canadian Agricultural Societies would be induced to introduce some or all of these improvements, in this Colony. This course we purpose to practice in future to a much greater degree than we have formerly done, in the hope that Agricultural Societies will in future make it a point to import such articles as would tend to benefit the farming community, which importations should be sold by public sale to the highest bidder, so that the money would again revert to the society for the awarding of premiums, &c.

Care of Fall Planted Trees Shrubs, &c.—In this cold climate fall planted trees should invariably have litter or rough manure thrown around them on the surface of the ground, to the depth of three or four inches, to guard the roots from injury; and in addition, all tender fruit trees, such as peach, apricot, and nectarine, should be sheathed with straw to protect them from the severe and often fatal effects of freezing and thawing.

All tender ornamented trees and shrubs, roses, &c., should be protected in like manner. A little care of this sort, timely given, will prevent much loss and disappointment. It should be done just as the severe weather sets in. *Strawberry Plantations* made in the fall, should be covered with leaves or straw two or three inches deep. *Raspberries* should be pruned and laid down, and protected

with a covering of two or three inches of earth, or tied to a stake and sheathed in straw: they will bear a much larger crop and finer fruit than if left exposed to be enfeebled by the severity of the winter. Beds of tulips, hyacinths, and other bulbous roots, should also be covered with leaves or manure, which can be raked off early in the spring. No one who loves fine fruit and flowers, will think it too much trouble to take such pains now, as will ensure their safety during winter. Their disappointment will be less, and their enjoyment more, next summer.

ICE HOUSES.

A short time before I left England, you published in the Gardeners' Chronicle a number of letters and plans for the construction of ice-houses, but, as far as I can remember, nothing at all resembling the Chinese one, which I shall now describe to you. On the left bank of the Ningpo river, proceeding upwards from the town and forts of Chinghai, and in various other parts in the north of China, I have met with these ice-houses. When I inspected them for the first time, last winter (1843), their construction and situation differed so much from what I had been accustomed to consider the essentials of an ice-house at home, that I had great doubts of their efficiency; but at the present time, which is the end of August, 1844, many of these houses are yet full of ice, and seem to answer the end most admirably. You are probably aware, from my former descriptions of the country, that the town of Ningpo is built in the midst of a level plain, from 20 to 30 miles across. These ice-houses stand on the river sides, in the centres of this plain, completely exposed to the sun—a sun, too, very different in its effect from what we experience in England—clear, fierce, and burning—which would try the efficiency of our best English ice-houses, as well as it does the constitution of an Englishman in China.

The bottom of the ice-house is nearly on a level with the surrounding fields, and is generally about 20 yards long by 14 broad. The walls, which are built with mud and stone, are very thick, 12 feet in height, and are, in fact, a kind of embankment rather than walls, having a door through them on one side, and a kind of sloping terrace on the other, by which the ice can be thrown into the house. On the top of the walls or embankment a tall span roof is raised, constructed of of Bamboos thickly thatched with straw, giving the whole an appearance exactly resembling an English haystack. And this is the simple structure which keeps ice so well during the summer months, under the burning sun of China! The Chinaman, with his characteristic ingenuity, manages also to fill his ice-house in a most simple way, and at a very trifling expense. Around the house he has a small flat level field, which he takes care to overflow in winter before the cold weather comes. It then freezes, and furnishes the necessary supply at the door. Again, in spring these same fields are ploughed up, and planted with rice; and any water which comes from the bottom of the ice-house is conveyed into them by a drain constructed for the purpose. Of course here, as in England, the ice is carefully covered up with a thick coating of straw when the house is filled. Thus the Chinaman, with little expense in building his ice house, and an economical mode of filling it, manages to secure an abundant supply for preserving his fish during the hot summer months. This, I believe, is the only, or at least the principal purpose to which it is applied in this country, and never for cooling wine, water, or making ices, as we do in Europe.

It is now, I think, a question whether we could not build ice-houses at less expense and more efficient, upon the Chinese plan than upon the old underground system common in England.—*Gard. Chron.*

Purple Copal Varnish.—Prussian blue and vermilion, or any other blue and red; mix them with the varnish, according to the tint required.

ON LIME AND ITS COMPOUDS, AND THEIR INFLUENCE ON AGRICULTURE.

BY MR. THOMAS ROWLANDSON. LIVERPOOL.

After the preservation and due application of farm-yard and other ordinary sources of putrescent manures, no matter connected with subjects of the like nature assume so great a pecuniary importance to the agriculturist of the United Kingdom as that which heads this paper, as the expenditure for lime alone greatly exceeds what is paid for bones, guano, and other extraneous fertilizers. I am thoroughly convinced, from my own personal observation, that the value of the labor and capital expended on this article alone by farmers throughout Great Britain and Ireland greatly exceeds one million of pounds sterling—a startling amount certainly; but those who are acquainted with its extensive use in the districts where it can be obtained with ordinary facility will, on reflection, be perfectly convinced of the assertion. In this amount, however, I do not include the other sources of calcareous manures, (but whose action is precisely similar eventually, only more slow in their operation,) such as chalks, marls, &c. From this statement it will, therefore, be seen, that it is a matter of primary importance that the nature of the action of calcareous manure should be fully understood by the British agriculturist.

No matter has given rise to so many and so warm disputes as the action of lime on land, some giving to panegyrics, others have with equal vehemence condemned its application in toto. At a future part of this paper I believe I shall be enabled to elucidate the causes from which arise these discrepancies in its action, and also to show that each party, under particular circumstances, was perfectly right in maintaining its respective opinions regarding its use or inutility; I trust I can also point out an unerring method by which parties may judge when calcareous substances are required; and I can now state, with the utmost confidence, that after a most extensive practice and extremely extended sphere of observation, I have hitherto found this test a most *unerring one*, and "will be found on perusal, simple and unexpensive, and of such a nature that the most uneducated ploughman may easily be made to understand." As it is not likely that every one will have equal facilities for making the experiments that I have had, it will probably be interesting to many of my readers to have repeated to them an illustration made on a large scale.

I possessed a farm in Ireland, consisting almost wholly of unreclaimed land, and what few acres had been cultivated previous to my occupancy of the same had also been of a like description, there having been part of a deep peat-bog extending over 500 acres, and had at one period varied from two or three feet to twenty feet in thickness, most of which, at the time I commenced my operations, had been cut away for the purpose of fuel, down to only about two feet in thickness. At the corner of a field which had been separated (in order to cut a new road) from the main part of the previously cultivated portion of the land, but abutting on that part on which no attempts had ever been made at reclamation, I fixed my garden, divided from the barren heath merely by a drain which had been made to carry away the water from a spring rising in the centre of the bog, and which otherwise would have overflown the road. This garden, at the time this relates to, was only about two feet deep of surface soil, though in the memory of many living had been at least ten or fifteen feet deep, at which period it, previous to being cut away for fuel, formed a quaking bog, (through the influence of the spring just mentioned.) During the time I resided at this place, I raised through ordinary garden culture, on this spot, as splendid crops of cauliflowers, carrots, potatoes, turnips, cabbage, (many in the last summer fourteen lbs. weight and upwards each,) and all descriptions of culinary vegetables (I merely recapitulate these to show the fertility of the soil) as could be desired. The process by which this garden soil had been reclaimed was paring, burning, and liming.

Although I did not actually test the matter, I am quite convinced that the soil of the garden just alluded to possessed at least ninety per cent. of combustible vegetable matter, and the unreclaimed, at the opposite side of the drain, possessed only a very trifling per cent. more vegetable matter, in consequence of not having had an application of lime. Let it be remembered by the reader that the whole had originally formed a continuous piece of waste, and the separation between the two pieces was merely the recent formation of a drain. On the one side we see utter barrenness, on the other high fertility. The barren side is now pared and burned; and an

attempt made to grow crops—an entire failure ensues. The one side, after the heaviest rains, gives no further colour to water than the most fertile loams; the other side* gives, after the operation of burning, a deeper tinge to the rain water than it had done heretofore, and the land is found to be far inferior in fertility to that on the opposite side which had been limed. In fact the whole of the cruciform plants died almost as soon as they had vegetated. Having seen what has taken place in what may be termed the large scale, we will take a little of the soil from each and pursue our experiments in the kitchen. We lay our two parcels on the kitchen table, and procure from the dame two clean tall ale glasses, usually christened tall-boys. We have already procured from the druggist two or three pennyworth of ammonia, commonly called hartshorn. Here we are set up with as complete a laboratory for the present investigation as though an expense amounting to £20 had been gone to for the purpose. After marking what description of soil is placed in each glass, we pour a little ammonia over each, rather more than will cover the same, say about a quarter of an inch. We sit down and mark the result—when the liquid in the glass containing a portion of the soil which has been only pared and burned will speedily appear of a deep brown colour, as before related. We await a little longer, to see if any change takes place in the glass which contains the rich garden (but limed) soil, but wait in vain; not the slightest appearance of change is to be seen. If the liquid in the last mentioned glass is now analyzed, we shall only find, in addition to the ammonia, a little potash, lime, &c. as the results. Not the slightest portion of carbon is held in solution, not a trace to be found. Now here is a complete contradiction to Mr. M'Turk's theory of lime acting upon or disorganizing the animal and vegetable remains, rendering them soluble, &c. for which, see quotation. Mr. Anderson also says, (quicklime) enters into the union with these organic substances and forms compounds partially soluble in water. Mr. Anderson does certainly afterwards state the *modus operandi* to be different when converted into a hydrate, but as he does not give the slightest proof of its doing so, the agriculturist may take it for what it is worth, viz., mere assertion.

Well, we are not quite satisfied that this striking difference is occasioned solely by the use of lime. We shall continue our experiments a little further, pour out the contents of the glass containing the soil which gives the colour to the ammonia, and wash the same clean. We put a little of the unlimed part again into it—we have a bottle of clean lime water ready for the occasion—we fill the glass to the brim with lime water; we let the same stand, and by this time (always suppose the evening is used for these experiments) it will be time for bed. After a sound sleep, which the fatigues of the previous day have fully prepared us to enjoy, we rise with the lark in the morning, go to the glass left the night before, with the lime-water and peat, and give the same a shake up, then proceed to our ordinary business. After the breakfast is over we snatch a couple of moments from our usual duties, we pay another visit to our glass, dip our finger in in order to taste the contents, and find that the strong alkaline taste so well known as lime-water has nearly, if not wholly, disappeared. If there is no perceptible taste of lime-water, we begin to think that it is time to see whether it is our senses have deceived us or that the lime-water really has disappeared. We go to the cupboard, (always safely locked, as the substance we are about to bring out is a deadly poison, and fatal results have ensued in consequence of having been mistaken for Epsom salts), we procure a little oxalic acid, and dissolve a very small portion in cold water; we pour a little fluid from the glass in which the lime water was placed over night into the vessel containing the oxalic acid in solution. Not the slightest change of color takes place—a certain sign that the whole of the lime contained in the water has been absorbed in some manner or other by the peat. Well, we continue repeating our experiment, daily pouring fresh lime-water over the peat, until at last (which will take some time, as lime is only held in solution in 780 times its own weight of water) we find that, on decanting the fluid into the solution of oxalic acid, it assumes a milky appearance, and a heavy white powder (the oxalate of lime) is eventually precipitated. We know now that the peat will absorb no more lime.† After this,

* This was, no doubt, caused by the great quantity of carbonate of potash set free by the burning, as potash combines with humic acid, forming humate of potash.

† This experiment can be performed by merely

we pour out the whole of the liquid from the peat and pour caustic ammonia over the same, and let it stand a few days to see if the brown color will make its appearance, but no such thing occurs. Well, we have now arrived at this much—the application of lime prevents barren peat soils discoloring rain water, and all fertile soils have a similar property. We will try what liming will do.* We, therefore, lime the barren side, and procure most splendid crops of mangel, babbage, cauliflower, mustard, and rape.† Should any reader be sceptical about this being the true mode in which lime operates in fertilizing soils, we will put him in the way of pursuing the experiments still further, and making the process visible. Let a little barren peat be macerated in a short time in ammonia liquor, in order to procure some of the so-often mentioned brown-colored solution which must afterwards be decanted into a clean glass ready for the purpose; then pour into the decanted solution some lime-water, when the whole, instead of the former transparent brown appearance, will become immediately turbid. and gradually a light flocculent precipitate of a dirty brown color will separate, leaving (provided sufficient lime water is used for the purpose) a perfectly clear liquor, and the humate of lime will be precipitated to the bottom of the glass, and can be obtained in a separate state by filtering the same through paper.

The humate of lime thus obtained for all practical purposes may be deemed insoluble. I think I have now fairly proved that, instead of lime rendering inert matters in soils abounding in carbonaceous matter soluble, its fertilizing effects are caused from quite an opposite operation, viz., the rendering a substance previously existing in such soils, which had a deleterious influence on vegetation insoluble and inert, but which, before the application of lime, was soluble in the presence of some of the alkalies and their carbonates. —*Blackwood's Quarterly Journal of Agriculture.*

We copy the following highly interesting and valuable extract, from D. Thaer's *Principles of Agriculture*, for which we are indebted to our able contemporary *The Farmer's Cabinet.* The true principle of applying manure to the soil, is to give the different classes of plants the particular kinds of food best adapted to their general habits and organization. Soils differ materially in their compounds and proportions, and even those of the same quality, by different degrees of cultivation, are made so different in their comporent parts, that manure of an uniform quality, would be found to have different and possibly opposite influences. Hence, the importance of watching the operations of nature, in bringing forward vegetation, and by carefully investigating the influences of the various qualities of manure used in this country for forcing crops, the farmer may materially assist in increasing his crops without hazarding much risk in injuring them. Maize, potatoes, and turnips, devour, if we may be allowed the expression, a great quantity of vegetable manure, and those plants thrive so luxuriantly on barn yard manure, that it would be a most difficult matter to surfeit them. Wheat, however, being a more tender plant, requires different treatment. It is worthy of remark that in a majority of cases, where the soil is unproductive in wheat, that the best possible food that could be given to the crop, may be found in the subsoil, lying so near the upper soil, that it may be brought to the surface with a common plough. A manure that could force a heavy yield of straw, might be so barren

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putting a little lime to barren peat soils; but in doing so the experiment is neither so elegant; nor the *modus operandi* so apparent. So strong, however, is the affinity between the humic acid and the peat lime, that if we mix 100 grains of peat and ten grains of quicklime, and pour sufficient water on the same to render it quite moist, it will be found within ten minutes the mixture will cease to have the power of colouring the strongest liquor ammonia that can be procured, and will have all the properties of a rich garden soil.

* This portion of the paper is written in a familiar style merely to illustrate to those who may have a desire for information, but consider the nature or rather deficiency of their education incapacitates them for such experiments, that many experiments can be made of the most important description with the most perfect ease, and apparatus as simple as those above mentioned. In fact, I believe, and will attempt, in a future part of this paper, to prove, from the above experiment, the fallaciousness or truth of Liebig's theories as to the assimiliation of nitrogen and carbon.

† These crops were absolutely obtained in the manner stated.

in the ingredients for forming grain, that a total failure might be traced alone to this cause; but in our opinion the evil does not lie so much in a deficiency of of the requisite food for the plants, as it does in giving that food in proper proportions to suit the habits of the different classes of plants. A soil that would produce a large yield of spring wheat, unquestionably, would be productive in winter wheat, if the lower and upper soil were incorporated to suit the habits of the latter grain. The one requires a loose permeable soil, and one rather rich in decomposed vegetable substance; and the other a firm, deep, and dry soil, and on the whole rather barren in vegetable matter.

On manuring the Soil.—Manures are of two sorts, those which nourish the plant by becoming, as it were, its food, and those which stimulate its growth by chemical decompositions and combinations. It is not easy to define the way in which such manures produces its effect; but it is very important that we should make the endeavour to discover it, as it is only by attaining or approximating towards the real effect, that we can appreciate its value or feel authorised to discard any particular manure, or to continue its use. But in making this attempt, we strike upon one of the greatest difficulties in the man gement of land—the power of deciding as to the soils and manures that are fitted for each other. In a practical point of view there is no subject more difficult, and no knowledge more difficult to attain; for a long time, and time of great value to to the farmer, may be wasted before he is enabled to say whether he is treating his soil in the right manner. It is true that all soils may contain the aliments necessary for every kind of plant, but they are not in equal proportions; for this reason one kind of land favors the vegetation of one kind of plant, and another some other kind of totally a different nature. And in this way it is a nice point in the management of land, to know what our land is fitted to produce, and what kind of manure is calculated for this particular product. Our author makes an important distinction between vegetable and animal manure. The first, he says, appears to act on plants solely as an aliment, while the last acts on the soil as well as on the plants which vegetate there. Mineral manures, lime, plaster, &c., which contain no organic bodies, and, of course, nothing to be decomposed, act almost entirely by rendering those parts of the soil soluble, which were before insoluble, and by favoring and accelerating decomposition. The manures in common use, are composed partly of animal substances; the vegetable matter, from not being so easily soluble as the animal, prevents or restrains the too rapid decomposition of these last, and makes their effect more lasting. The vegetable matter would indeed have but little effect, unless animalized, by first passing through the bodies of animals; while on the other hand, the vegetable are made to decompose more rapidly by the addition of animal substances. The value of these manures does not depend on the quantity so much as the quality. This is a point very little attended to. They should be from the best animals. fed in the best manner, for that which comes from an animal will be of little value unless that which goes into him is of the best sort. Let an animal be fed on bad hay, or bad grain or straw, or any coarse material, with little or no nutriment in it, how can it be expected that the manure it makes can enrich the earth, when the creature itself is ill-fed and half-starved. To produce the best manure the food must be of the best sort; or to say the same thing in other words, the animal should be in the best health.

Our author goes with some minuteness into the nature of stable manure, but it is not necessary to alarm our sensitive agricultural readers with any scientific details, however correct or interesting; it is enough to say that in his opinion from his experience, this is admirably suited from its rapid decomposition, and the heat it throws out during this process, to cold, sterile, moist, and clayey soils, while to the chalky, dry, sandy, and calcereous, it is extremely injurious; it forces forward vegetation rapidly at first, but when its influence has somewhat diminished and vegetation is left to the natural strength of the soil, it droops and becomes languid. It may be inferred from these ideas, that this kind of manure is considered only transient in its effect, and is of very little use, except on moist and tenacious soils; though it is extremely beneficial on soils containing a large amount of humus or vegetable mould, from its promoting, by the passing off of its ammonia, the decomposition of this substance. When used by itself, the author directs that it should be carried to moist and clayey soils as soon as its first stage of fermentation has commenced, and then buried; fermentation and the heat it produces render the soil looser and lighter, and the repeated ploughings incorporate it with the soil and tend to fertilize it. When used on warm, light soils, he recommends the mixing it with vegetable substances which still retain their succulency, or with earth, and especially with turf. These should be mixed together, heaped up in successive layers, protected from too free an access of air, and moistened when the weather is dry. The manure from horned cattle does not ferment so rapidly or develope so much heat as that from horses. Its effect is not therefore so rapid, but in proportion more lasting, and it may be used on a greater number of crops, and crops more various in their nature. From there being very little apparent increase of temperature during decomposition, it is peculiarly adapted for warm soils; when buried beneath tenacious, clayey soils, it will produce little or no effect until brought into contact with air.

LETTERS ON AGRICULTURAL IMPROVEMENT.

BY I. J. MECHI.

LETTER V.

EXPLANATION OF THE BUILDINGS AT TIP TREE-HALL FARM.

The yards are so placed as to be entirely sheltered from the east, north, and northwest winds, whilst they are quite open to the south and west for sunny warmth; it is presumed heat absorbed by the brick-walls and buildings during the day will be retained for a portion of the night, so as to produce a warmer atmosphere in the yards.

The farm and other yards are on a *perfect level;* they are underdrained every four yards with stones and a pipe—same as the land. All the drains (except the roof-drains) terminate in the manure-tank; so that not a pint of water that falls directly on the yards ever escapes, except into the tank. All the water that falls on the roofs is conveyed through pipes to the brook.—The sheep-yards, the bullock and horse stables, are all paved perfectly smooth with hard yellow bricks, set in cement; so that no liquid manure is wasted. This arrangement admits of cleanliness, without waste, by occasional washings.

The straw for litter being cut into chaff, is applied where required without waste.

The manure-tank is bricked, and set in cement. We put into it the solid manure as made, turning the moist bottom upon the top, as occasion requires, to prevent too violent a degree of fermentation, and adding occasionally sulphuric acid in water, especially in the summer months, or an occasional layer of earth. In winter we have always sufficient moisture in the tank. As we pump out the liquid manure from the well, which is three feet deeper than the tank, no solid manure can enter, there being proper gratings to prevent it. We choose a wet day, when nothing can be done on the land, to turn over the manure in the tank—there being a slated roof over it which keeps the men dry. It faces the north; so that the sun cannot shine on it to evaporate the ammonia and strength of the manure. In the winter, when we have a superabundance of moisture, we pump the liquid manure into Crosskill's liquid manure cart, which holds 260 gallons, and apply it to the pastures, young wheats, or fallows; first fixing the ammonia where required with sulphuric acid, being governed as to diluting its strength by the dryness or wetness of the weather. We find the tank-manure of extraordinary strength, as well as density, from subsidence by fermentation and pressure. When filled to four feet above the ground, it contains about 200 loads of solid manure.

Manure, that is dropped in the day, is removed the following morning in barrows to the tank, so as to preserve its efficacy.

The contents of the water-closets are received into a brick tank, set in cement. The ammonia is fixed and smell prevented by sulphuric acid: mixed with earth it will form a valuable manure. Nothing on our farm, in the shape of manure, is ever wasted! Why should it?

The piggeries paved with flagstones, discharge their moisture into the manure-well.

The stone water-tanks in the yards and house are all filled simultaneously by one pump over a tank, 14 feet deep, bricked, and set in cement; into which is brought a never-failing stream of pure spring water from the valley below. This water formerly spoiled some acres, and caused the bog; but now it answers a much better purpose. I do not like the usual custom of giving manure water to horses and cattle, instead of to the land. I presume they are, like ourselves, all the better for drinking pure water instead of filthy.—The pump also supplies our copper, on which fits a perforated iron vessel, capable of steaming six bushels of potatoes or other matter. This vessel travels backwards and forwards with wheels on a small iron rail; and by a lever, is capable of being filled, emptied, or placed over the copper by a strong lad. The merit of this is due to the ingenious Mr. Crosskill, of Beverley, who manufactured and contrived it.

The cart-lodge is so placed as to avoid sun, and we consider a weather-tight implement house essentially necessary.

The barn is 130 feet long, 30 feet wide, and rises 18 feet before it springs the roof. The horse-power that drives the threshing machine occupies 30 feet square on the ground-floor, and 30 feet more is occupied by the granary and chaff-house, over which is the threshing apparatus.

The unthreshed corn being on both sides of, and near to the threshing-machine, economizes time in removal.

On this account, and the facility of doing work under cover in bad weather, I like plenty of barn-room. I do not see the necessity of a steam-engine, as we do our threshing, chaff-cutting, &c., when we can do nothing else.

The threshing-machine is of six horse-power; but we throw it out of gear, and work the chaff-cutter or corn-mill with two horses. We cut thirty-two trusses per hour into chaff.*

A crane (cost 50s.) fixed upon the top of the granary in the barn, enables one man and a lad to load the sacks of corn with ease, dropping them into the cart or waggon.

The iron cutters and pipes to our roofs may be found fault with on account of the expense, but I really cannot see the utility or profit of the present custom, that is, putting good and costly manure on straw, and then washing it all out again with tens of thousands of gallons of pure water off the roofs, taking especial care that it

* The threshing-machine takes in the straw lengthways, and having twelve parallel beaters, each three feet six inches long, no wheat kernal can escape its action. It does not break the straw.

shall poison the horse-pond, and then run down to enrich some stranger's meadow at the first flood. I hope in fifty years time, the farmer who does this will be considered insane. The idea of a man's throwing away his manure with his left hand, and with right paying money to bring it back again, all the way from Peru or Africa, seems too ludicrous for the nineteenth centuey.

So far as we have had experience, pigs, poultry, and horses, thrive uncommonly well in our yards and stables, and no doubt our cattle and sheep will do the same. All our horse feed is cut for the manger. Even our tares and green food are cut up with straw.

We contemplate clipping our bullocks when stalled in the warm stables, taking it for granted that nature provided their long winter coats for open fields, as a non-conductor of caloric, and that they never were intended for artificial confinement. The thermometer will regulate our ventilation. They will be groomed every morning, the same as horses. There is quite as much reason for removing from their skins the insensible perspiration, as for grooming a horse. Health depends on cleanliness, as much in an animal as in a human being. In a state of nature they would rub against a tree or fence. Having no such opportunity in confinement, we must do it for them. We shall shear some of our sheep before Christmas. I mean those kept warm and dry under cover: this of course is quite an experiment. It seems on the same principle as the bullocks, confinement with their warm clothing does not answer, so we shall try them without.

Some butchers agree with me that farmers often spoil the mutton as well as the fleeces, by keeping them on too long. Besides a long coat requires support all the winter, as well as any other part of the body.

Th· dairy, beer, wine, and coal cellars are all under the house, light, cool, and airy.

As to a good house, why, if our farmers are to be men of education and capital (which I hope they will be when they get Agricultural Colleges), I do not see why for a few pounds extra per annum, they should be deprived of the comforts of a proper residence. As my substantial brick and slate buildings are thought to be in advance of the age, I hope those who find fault with them will consider they are indebted for the *next* generation.

If board and thatch are so very durable and advantageous in Farmeries, why not apply them in towns and cities? My own opinion is, those temporary erections indicate either poverty or miscalculation. If there is "philosophy in frying a pancake," why should there not be "an adaption of means to the end" in planning and erecting farm buildings?

In conclusion, as some of my farming operations are on so very different a plan from the common routine of proceeding, I wish my farming friends to laugh at, but not to condemn them, till they have had an opportunity of seeing whether they answer or not. Should they by chance succeed, I shall expect those who now enjoy the joke will have the good sense to follow the example set them. If they do not, I shall certainly take care to remind them *that* they *ought so to do.*

I. J. Mechi.

4, Leadenhall Street,
London, July, 11th, 1844.

LETTER VI.

THE DRAINAGE OF SURFACE WATER FROM HEAVY LANDS.

Sir,—

The very various and conflicting opinions as to what is perfect drainage, convince me that practice without theory, is like a ship without a compass, dangerous, uncertain, and expensive.—Having cut, during the past year, with good effect, sixty miles of drains, I annex a sectional representation, will describe its action, and state what I consider to be the true theories of perfect drainage.

My operation being different to the usual custom, I beg to submit my theories and practice for discussion, approval, or disproof. The question of drainage is far too important to remain longer in obeyance. The Royal Agricultural Society will do an essential public good by deciding the point.

Theory 1. That in perfect drainage, twelve hours rain should percolate and leave the land, in less than twelve hours from the time the drains begin to act, the difference in time being equivalent to the proportion of the water the earth chooses to retain for its use by capillary attraction.

2. That to effect this, the subterranean area of porosity should nearly equal the surface to be drained, so that if the space to be drained were one square yard, the sides and top of the drain should present an area for percolation equal to nine superficial feet, minus the allowance for pressure.

3. That the continuance of water in the soil longer than it would remain by capillary retention, is injurious, chemically and mechanically, causing inequality, density, and sedimentation.

4. That the earth and roots will abstract from the passing water those gases for which they have an affinity, and in which they may be deficient.

5. That the form of drain should be deep and narrow, as affording the greatest area of porosity at the smallest cost, increasing the quantity of porous earth, available to roots—nothing animal or vegetable can exist in dense undrained subsoils.

6. That the material for filling the drains should comprise the greatest durability with the least power of capillary attraction.

7th. That where pipes are used, their material should be durable but porous; their form not round or square, but a very narrow and deep oblong, the object being to get a large area of porosity.

8th. That small, round, hard pebble stones,

with a pipe over them (as shown in the annexed drawing, and as used on my farm), seem to present all the advantages desired, viz., the impossibility of choking by superincumbent earth, resistance of pressure from the sides, absence of capillary attraction; the round hard stones having but little mechanical affinity for the water, and offering but small resistance to its passage.

9th. That the passage of water in a pipe or drain is always quicker than its percolation through the earth or material of the pipe.

10th. That no drain should much exceed 100 yards in length (fifty or sixty would be better), without opening into a leading drain of great dimensions. If the drain were in any part full, it would delay percolation.

11th. That neither bushes, straw, or other perishable material, should ever be used in a drain.

12th. That the deeper the drainage, the better the crops; but in no case should any portion of the drain be nearer to the surface than 18 inches.

13th. There should be a leader to every 300 yards of drains, giving it ample capacity.

14th. There should be an open ditch (but no fence) for every seven or eight acres drained. The absence of an occasional open ditch is what renders so much drainage useless. Long continuous narrow streets without frequent outlets get frequently obstructed; the same may be said of drains—a full drain with a slow egress sadly retards the filtration of water. Drains should be never more than half full of water—the other half air. In this way the superior weight of water causes proper filtration by displacement of air and replacement of water by quick passage.

15th. That the rapidity of percolation depends on the subterranean area of porosity and the depth of drain combined. Shallow drains want a greater area of porosity than deeper ones; because (as water presses equally on all sides toward the vacant space in the drain) the deeper the drain the greater the weight and column of water. Consequently, the greater the pressure the more rapid the filtration: filtration at two feet will be double that at one—at four feet four times as great, and so on in proportion to the superincumbent weight of water pressing equally on all sides towards the drain. It is on this principle that deep pipe drains act quicker and lay dry a greater extent of ground than shallow ones—consequently, the deeper your drainage the smaller may be your area of subterranean porosity. Pipes at the depth of five feet would hardly need stones; the pressure being about two-and-a-half pounds on every square inch at first, and as the water escapes and diminishes, so will the drain run slower and slower, in a ratio proportioned to the diminished pressure.

Still stones with pipes, in my opinion, are the quickest conductors of water generally in heavy land.

Now, although my drainage is considered the most perfect in the county of Essex, I only consider it one-fifth as perfect as it should be. My drains have one foot of subterranean porosity for every five feet of surface, instead of having five feet: still as it is expensive even so, I must be content with it; and I will assume it to be the *minimum* of perfect drainage.

During the recent nineteen hours' rain, after a very dry time, the pipes and stones poured out an immense volume of water, which, on the second, third, and fourth day, gradually decreased; proving my calculation correct, that if my drains had been perfect, it would have all run away in seventeen hours, instead of eighty.

On comparing notes with a farming friend of mine, who has *bush* drains from 2 to 300 yards long, in the same quality land, he said 'I know not what has become of the water, for none has appeared in the ditches;" and he seemed quite surprised at my drains running so much. What is the inference?—that bush and straw drains of great length are *perfectly worthless* as compared with pipes and stone drains of moderate length.

In fact, in one field I drained about three acres the same time, distance, depth, and soil, with scuds or bands of straw tightly fitted over the vacant space, and find it as compared with the tile and stone drained part, almost useless, so much so, that we shall re-drain it.

The consequence of my friend seeing no water is, that it stagnates and remains in the soil, keeping the roots cold, wet, and sour, resulting in late crops and densely working land. I hope, after this, we shall hear no more of scud or bush draining.

From the moment our land was ploughed after draining, *no water has ever run off the surface*, whether in winter or spring, although our fields have a pleasant slope.

So far my drainage has answered, although I still maintain it is only perfect in degree. It would have been real economy to have spent another £5 per acre, and carried out my theory completely.

I am not able to say which answers best, a pipe only, the full size of the drain, or a pipe and stones. The latter I give the preference to, the stones having less capillary attraction.

I consider drainage almost as important in a very dry season as in a very wet one. This spring we had a practical illustration of it at Tiptree. The crops never looked yellow as they used to do, but always a healthy green, and the very first rain caused an amazing quick growth.

It is very easy to perceive that porous drained land on a cool bottom keeps moist in dry weather, by capillary attraction (like lump sugar resting on moisture).

At night the insiduous dews fill its surface. No such effects can take place in sodden land, with gaping cracks, and a baked impervious surface.

For further details of my spring and other draining, I beg to refer you to my letter of the 28th of March last.

If I am wrong in my theories or practice, I shall feel obliged to any gentleman who will correct me, my object being to arrive as near perfection as possible.

Permanent grass on very still clays must be ploughed up before the drains can act. The impervious pan requires to be broken up. This may be a subject of regret, but it ought *not* to be; for I quite agree with Mr Morton, that no permanent grass can keep so much stock per acre as the tur-

nip culture and green crops, fed, folded, or stall-fed, nor is it so profitable. Grass land is, therefore, a national loss, employing less labor, capital, and affording less profit than it would do if cultivated with roots, green crops, and corn.

AS TO SPRING DRAINING.

It must always be effected by drain-pipes (without stones) fitting it into each other so as to form one continuous unbroken channel; half-circular pipes, fitting on each other, are sometimes used, if properly landed they answer, but are not so secure as the whole pipes.

I think we may lay down as a safe theory:—

1st. That as the pressure of water is from *below*, and frequently as much as fourteen pounds on every square inch, that spring drainage should be *deep*, so that the superincumbent earth be equal to resisting the pressure on the pipes.

2d. That the pipes should be always large enough to contain air as well as water.

3d. That no stones, bushes, or straw should be used in spring drains; it being evident the immense pressure I have mentioned, would quickly choke them with earth. Pipes, for spring-draining, should alone be used. Useful information on this point is contained in "London's Encyclopœdia of Agriculture," "Stephens' Book of the Farm," and "Hutchinson on Spring Drainage."

I. J. MECHI.

4, Leadenhall Street,
London, July 16, 1844.

Pickling Eggs.—The farmers' dames in some parts of Hampshire, England, in their notable endeavours to turn every thing to good account, have acquired much fame for pickling eggs, which, whilst they constitute a somewhat novel feature in the catalogue of condiments, are at the same time particularly relishing. When eggs are plenty, they take from four to six dozen of such as are newly laid, and boil them hard; then, divesting them of the shells, they place them in large-mouthed earthen jars, and pour upon them scalded vinegar, well seasoned with whole pepper, alspice, ginger, and a few cloves of garlic. When the pickle is cold, the jars are closed, and the eggs will be fit for use in a month afterwards. The eggs thus treated, are held in high esteem by all the farm house epicures in that part of England.

Simplicity.—The more I see of the world, the more I am satisfied that simplicity is inseparately the companion of true greatness. I never yet knew a truly great man—a man who overtopped his fellow man, who did not possess a certain playful, almost infantile simplicity. True greatness never struts on the stilts or plays the king upon the stage. Conscious of its elevation, and knowing in what that elevation consists, it is happy to act its part as other men, in the common amusements and business of mankind. It is not afraid of being undervalued.

An honest man is believed without an oath, for his reputation swears for him. Xenocrates was a man of so much truth and fidelity, that the Athenians gave him alone the privilege that his evidence should be lawful without swearing. It is said of Fabricus, that a man might as well attempt to turn the sun out of course, as to bring him to do a base or dishonest thing.

To cure a Burn.—A lady, a preacher of the society of Friends, in New York, was so successful in curing burns, that many of the lower class supposed her possessed of the power of working miracles. The following is the recipe for the medicine: Take one oz. beeswax, with 4 oz. burgundy pitch, simmered in an earthen vessel together, with as much sweet oil as will soften them into the consistency of salve when cool—stir the liquid after taken from the fire till quite cool. Keep it from the air in a tight box or jar. When used, spread it thinly on a cloth and apply it to the part injured. Open the burn with a needle to let out the water till it heals.

A farmer lately turned his sheep into a lot occupied by some cherry trees, which had sent up shoots from the roots; the consequence was, that the sheep partook of the leaves of these shoots, and were soon seen staggering about the lot and tumbling upon their heads. Many of them died, when their stomachs were found to contain large quantities of these leaves which, all know, abound with *prussic acid*, fatal alike to man and animals. It should be known, too, that the stones and twigs, as well as the leaves of the peach, also contain prussic acid, and are poisonous.

ROTATION OP CROPS.

I propose to give you a series of short papers on the agriculture of the Lothians, in the hope that they may prove interesting to your numerous readers.

I am unwilling to suppose that there is nothing in the experience of a district, so long famous for its agriculture, that may not be studied with profit, even by individuals possessed of great skill and knowledge in the most useful of arts; but at the same time I am aware that the most valuable parts of our system, may have already been transplanted, and may even now be flourishing in the United States, with all the luxuriance which a virgin soil imparts.

Trusting to your indulgence, I shall therefore devote this letter to some introductory remarks on the rotation of crops. I am fully aware that the sanguine expectations of some, as to the application of chemistry to agriculture, lead them to believe, that at no distant day, rotation of crops will be numbered with the things that were—that the finger of science will point out to us, not only the substances removed with each crop, but also how we may replace them in an economical manner. I am too ardent an admirer of chemical science to doubt its power to do this, but I cannot believe that it will very materially affect the axiom that a sound and philosophical system of rotation is the basis of all judicious and profitable agriculture; for even were we so far advanced in chemical knowledge, as to be able to grow luxuriant crops of wheat year after year, on the same land, without deteriorating it, it is evident that the supply of this sort of grain would soon exceed the demand. From thus being the most remuneting of crops, owing to the limited extent of land on which it can be grown, it would gradually become less so, while the supply of the other corns which are less remunerating, owing to the facility with which they can be grown on moist land, would be shortened, and the price of course enhanced; and when that point was reached, at which the profits were equally balanced, the further application of the principle would be arrested. I apprehend therefore, that the legitimate occupation of chemistry is to point out to us how we may avail ourselves of the large amount of inorganic substances laid up for us in our own soils by supplying those of which they may be in want—to show us how to draw upon nature, so that our drafts may be honored—how to pay the interest, that we may have the use of the principal, rather than that we are to look upon our fields, as a mere extention of space—the floor of a manufactory, into which we are to bring from without, *all* the raw materials required, for the production of the substance we propose to obtain.

The theory upon which the rotation of crops is based is, that different plants require different series of the inorganic substances contained in the soil, for their growth and development; but as these substances require the action of tillage and the *seasons* to reduce their particles to that minute state of division, in which they can be absorbed by the spongioles of plants, therefore the less frequently those plants which require the same series of inorganic substances are reared on the same soil, the more copiously will they be supplied with properly prepared food when they are reared.

The following table from the transactions of the Agricultural Chemistry Association of Scotland, shows the amount of inorganic substances contained in three different soils, and that a fertile soil contains at least 9 or 10 of these substances.

	Very fertile.	Fer. with manure.	Barren.
Organic matter - - - -	97	50	40
Silica (in the sand and clay)	648	833	778
Alumina (in the clay) -	57	57	91
Lime - - - - - - -	59	18	4
Magnesia - - - - - -	8½	8	1
Oxide of iron - - - -	61	30	81
Oxide of manganese - -	1	3	½
Potash - - - - - - -	2	a trace.	a trace.
Soda } Chiefly as com salt	4	0	0
Chlorine }	2	0	0
Sulphuric acid - - - -	2	¼	0
Phosphoric acid - - -	4½	1¼	0
Carbonic acid combined with the lime and magnesia -	40	4¼	0
Loss - - - - - - -	14	0	4⅛
	1000	1000	1000

Now it must be evident to every one, that if we go on for a length of time raising any particular crop which carries off a larger quantity of any of those elements than the relative proportion of it in the soil, we must by and by reduce the fertile soil, to the state of the barren one. As an example, we may take potatoes, which contain a large quantity of lime, magnesia, potash, soda, and phosphoric acid. Now it will be seen that these very substances are almost all wanting in the barren soil; we may therefore conclude that if we go on raising potatoes year after year without adding the whole substances removed, we will reduce the fertile to the state of the barren soil.

From what has been stated, it must be obvious that a proper course of rotation is that which removes equal relative quantities of the different substances composing the soil, and which places those plants, which feed on the same substances, at as great distances from each other in the rotation as possible. This holds good even in the vicinity of large towns, where, from the facility of obtaining manure, a large portion of, if not all the substances carried off, are returned to the soil; as by adhering to a judicious rotation even in this case you present such a profusion of aliment to the different classes of plants, as to convert *good crops* into *luxuriant ones*. In forming a correct judgment of any course of rotation, we must also take into consideration the facilities it affords for eradicating weeds, and keeping the land in that state of absolute freedom from them, which, while it adds profit, so it ought to be the pride of every agriculturist.

In my next, following up this subject, I shall give some account of the rotation of crops as practiced in the different districts.

JOHN GIRDWOOD.

Featherhall, Mid-Lothian.
—*Alb. Cult.*

Sir Humphrey Davy supposed that lime rendered inert and insoluble vegetable matter soluble, and almost all writers since have repeated the same opinion, till Leibeg brought forward facts which rendered it doubtful. Mr. Rowlandson has brought forward additional facts to support Leibeg's ideas on this subject, but we are obliged to omit the greater part of his reasoning, because it could not be understood by those who have no knowledge of chemistry. He has however made his own theory appear very probable, and it would be prudent before incurring much expense in applying lime or marl to land, to apply his simple test to the soil, viz: to put a small quantity into a wine glass and cover it with water of ammonia (spirits of Hartshorn), and if in a day or two it became brown like bog water it would prove that lime would be useful; but otherwise if the water remained clear and transparent.

THE FORCE OF HABIT.

My experience teaches me that I fail much oftener from inattention to little matters, than for want of general knowledge in the practice of farming. And this inattention in nine cases out of ten is the legitimate offspring of habit; and the reason why habit takes such an erroneous direction arises from the fact that our minds are naturally attracted by the magnitude of objects, without considering that this magnitude is only attained by the accumulation of single atoms.

To illustrate the importance of this idea, we will suppose two farmers, A, and B, start at once in the business of farming with $1000 capital each. A, saves six per cent. a year by exact economy, whilst B, sinks property at the same rate. For a time, perhaps, we shall hardly be able to notice any difference in their thrift; but in the course of a few years we find A, a wealthy farmer, and B, fast sinking to poverty. A fraction short of twelve years would suffice, at compound interest, to place A, in possession of $2000, and B, $500 Twelve years more would give A, $4000, and B, $250 Another twelve years would give A, $8090, and B, 125. Thus we see the result of habit in these two men in the important results produced, supposing providence favored both alike. But this is not all: habits generally require strength with the lapse of time. The man who sinks in the ratio of six per cent at first, would soon reach twelve, and so on, until his accelerated speed dashed his fortunes in the irretrievable gulf of ruin.

Suppose now we look at the practice of these men a little in detail. They neither of them are dissipated men in their general habits, and as to integrity and common sagacity are good at work. But A, has learned to calculate a little closer. He knows it requires no more to keep a good cow than a bad one. Hence, then, we find him in possession of a little better stock. His cows give at least a quart of milk more a day than B's; his sheep yield a little more wool, and a little finer. Here then he saves a few dollars. A, also seizes with avidity a few leisure hours to haul his muck, etc., for manure; whilst B, feeling a little tired, or the oxen being in the pasture at some distance, thinks it best to omit it until he can hire a hand a day and get a good lot of it. Thus A, has a little more manure, and of course a little better crop. So we see A, not only producing more, but the foundation of his prosperity widen in every direction.

But perhaps some one will say we can't help habit—it's second nature. Asking your pardon, sirs, I demur to this statement. You have the powers of reason, and the faculty of judging given you by your Creator, and no earthly power can hinder your exercising it. Accustom yourselves then, in every branch of your business, to ask this one question: is the method I propose the best, all things considered? Make a calculation of the profit or loss of every crop, and increase or diminish each kind as more or less profitable; having a reference to the permanent improvement of the soil. I have frequently been surprised at the results I have obtained in such calculations, and frequently altered my course very much to my advantage.

But you may not only improve your own habits by the discreet use of your judgement, but you have to do with creatures of habit. Even your domestic animals have habits which may gradually be moulded to your advantage. Seize every opportunity, then, to make them subservient to the great business of life. I will illustrate this by one very simple incident. I have a considerable range of woodland pasture, and I find by giving my cattle their salt at night near the outlet of the pasture, they soon learn to resort to that spot at that time of day. Another incident may be worth relating. I had come to the conclusion that a small lot of hens would more than pay for their keeping in destroying worms, &c., without any reference to their eggs or chickens, provided I could learn them to keep out of the grain. Now for two years past I have not had a mite of trouble with them, though running at large all the time, and grain within ten rods of the house and barn. The simple and effectual remedy is to turn down a lot of corn or grain for them to go to as they please. And the way they turned out the eggs in consequence was a caution to those who neglect to feed their biddies.

Peru, Me., June, 1845. J. H. JENNE.

HORTICULTURE.

BY P. BARRY, OF THE TORONTO NURSERY.

From the remarks we presented through the *Cultivator* for August last, and more particularly from the announcement of the editor in the following (Sept.) number, our readers were no doubt induced to expect thenceforward something in relation to fruit culture and horticulture in general. We intended to give some suggestions on transplanting, selection of orchard soils, cultivation, &c., in the October number, just before the fall planting would be commenced. This we were prevented doing by sickness; and now, as the planting season is nearly over, we will defer the portion on transplanting and selection of sorts, till the nearer approach of spring, when the directions we may give can be immediately carried into practice, and at present take up the subject of

SOILS AND SITUATIONS FOR ORCHARDS.

This is the first, and one of the most important considerations connected with fruit culture, and one to which we solicit the careful attention of every individual who wishes to ensure success to his labors in this department of husbandry.

It is important, as every farmer will admit, to have the soil and the situation adapted to any crop, even that which is to yield its full return in a single season, much more it must be so with regard to an *orchard that is to remain for one, or perhaps two generations, on the same spot.* If a mistake be made in planting wheat, corn, oats, or any other annual crop, it will but effect the operations of one year, and can be remedied the next; but if an orchard is planted in an unsuitable place, it is a loss to be felt for fifty or perhaps a *hundred years*, and cannot be remedied without great loss. Thus it is clear that this point demands the most attentive consideration; hundreds of those who have already planted throughout this province, have been convinced of this by experience, which is always a good but sometimes a very expensive teacher.—Those who have yet to begin may benefit by our remarks.

One of the greatest difficulties experienced throughout many sections of the country is the *destruction of fruit buds, blossoms, and young fruit, by late spring frosts.* This difficulty will be met with occasionally, and more or less, in all places, and under any circumstances, but may be guarded against, in a great measure, by a proper selection of location. It is well known to farmers and others who have observed the operations of frosts, that they are always more destructive on low than on elevated grounds. In the spring and fall of the year, infurious frosts are often felt in low portions of a field, when the higher portions have escaped entirely. The severe late frosts last spring, about 1st May, which destroyed the greater part of the fruit crop in Canada, and a large portion of the United States, was much more severely felt in low places than on high. On the latter the destruction was only partial in many places, while in the former it was complete. Within a few rods of where we write, we have a striking instance of this on a piece of low ground in our own garden; the dahlias and potatoe tops there are blackened with last night's frost, while on a high spot, within a short distance, they seem quite uninjured. This is readily accounted for, from the well known fact, that heat always ascends. The density of the cold air causes it to descend and displace the warm air, which quickly ascends and heats the tempera-

ture of the elevated places. We might quote many exact philosophical experiments to prove this, in addition to our own personal observations. The following from the pen of Professor Kirkland, of Cleveland, Ohio, which we find in the *Western Reserve Magazine*, is very satisfactory. It was made on the approach of one of those late spring frosts, by himself and brother, to test the accuracy of the view which we have expressed.

He says,—"Having compared our thermometers and set our watches, we repaired to our assigned stations. Mine was in the valley of Yellow Creek, in which is situated the the village of Poland: his was the Chestnut Ridge, known as the Mackerman Farm, one mile distant, and elevated sixty feet above my position. We noted our observations:—

At 7 o'clock, p. m. both thermometers stood at 34 °
At 8½ " " mine had sunk to 32 °
At 9½ " " " 30 °
At 10 " " " 27 °

When the grass, fruit blows, and vegetation generally, had stiffened with the frost.

"At nine o'clock his thermometer had fallen to 32 °; but at no time during the night did it descend lower, though it repeatedly fluctuated one or two degrees above. A greater difference existed in the state of the atmosphere than in the temperature at the two stations. A dead calm prevailed at mine during the whole night. Not a breath of wind was observable, and my observations were made by a candle in the open air.

"At his station a succession of breezes blew during the whole night, so rapidly, that at no time was it safe to open his lantern. Whenever they blew the most rapid, the thermometer would begin to ascend, and would occasionally vary two or three degrees. It was evident the succeeding day that the fruit was entirely destroyed on the low grounds where my observations were made, while not a bloom was injured on the ridge occupied by my brother."

From this and many other correct experiments which we have known to be made, with the same view, as well as from our own experience and observations, we are satisfied that elevated grounds are much preferable to low ones for fruit orchards in all sections subject to late spring and early fall frosts. We also find that these frosts are much less destructive to vegetation, and that fruit scarcely ever suffers from them in the vicinity of bodies of waters, lakes, rivers, &c. The past season has afforded an ample proof of this. The severe frost which was so general about the last day of May, seemed hardly to be felt along the south shore of Lake Ontario in the State of New York.

The crop of peaches, apples, pears, &c. has never been known to be finer, for ten to fifteen miles back from the lake, where the crop begins to diminish, and finally becomes a complete failure. This is accounted for in the same way as the escape of the fruit on high places. The lake possessing a higher temperature than the land, tempers the atmosphere all along its borders, and thus the fruit escapes. During the present season we have been informed that the apple crop has been quite abundant in the vicinity of Lake Simcoe, while in other places it was entirely cut off. These facts show the propriety of selecting elevated locations, or, if possible, contiguous to some body of water.

(To be continued.)

SELF-ACTING PUMP.

LUTHER TUCKER, ESQ.,—It is with much pleasure that I comply with the request of a gentleman connected with your journal, Mr. Howard, in furnishing a few statements with regard to a new self-acting pump which I have lately set in operation, and which, I think, promises to be of some value to the public: and to no portion of it more so than to agriculturists. Notwithstanding the multitude of ingenious contrivances which have hitherto been devised for obtaining water for economical and ornamental purposes, the most valuable is the old and simple plan of bringing it from some neighboring spring or water-course which flows upon a higher level than that on which the supply is needed. This method, although frequently attended with considerable expense, is almost universally adopted where it is practicable, in preference to the best constructed pumps for raising water from a lower level to a higher. The situations, however, where this plan can be adopted are not numerous, except in mountainous regions. Buildings occupied as dwellings, or otherwise, except in such places, are generally located on high ground, where water cannot be procured by an aqueduct or conduit pipe. In such places it is universally obtained from wells situated on such high ground, and in innumerable instances in the immediate vicinity of ravines and small valleys deeper than those wells. In such cases it is obvious that a syphon might be led from the bottom of a well over into the low ground, the current through which syphon would afford a mechanical power, which, if it could be economically applied, would be sufficient to raise a steady and perpetual supply of water upon the elevated level where it was wanted.

These considerations induced me some months since to consider whether a syphon might not be so constructed as to discharge water at the summit of its curve, that is, the highest point in the pipe of which it should be constructed. The idea at first appeared somewhat absurd, as those who are acquainted with the operation of the common syphon may suppose, inasmuch as in no point of a syphon is there so strong a resistance to any force tending to divert a portion of the enclosed fluid from the pipe than at the summit of the curve. The problem, however, is solved, and the contrivance which has accomplished the solution has been tested, and proved perfectly successful. The preponderance of the column of water in the longer leg of a syphon, which I have recently laid from a well fourteen feet deep, over into a neighboring ravine twenty-two feet deep, furnishes a sufficient mechanical power to deliver about one-third of all the water which enters the pipe at the bottom of the well, at the summit of the curve, two feet above the mouth of the well. The length of the pipe which goes down into the ravine is about ten rods, more than half of which distance it is laid in the ground nearly level. The shorter leg of the syphon descends perpendicularly into the well, and is constructed of lead pipe of an inch calibre. At the summit of this pipe, and connected also with the pipe which passes down the hill side, is the apparatus for discharging the water, of such dimensions that it might be enclosed in a cubical box ten inches square. I have omitted to mention that the pipe which passes into the ravine is about three-fourths the calibre of that which descends into the well.

The amount of water discharged by the apparatus two feet above the level of the ground at the mouth of the well, through a half-inch pipe with a free aperture, is little more than a gallon per minute. If the pipe is laid upon the ground and its adjutage contracted by a jet tube with an aparture of one-eighth of an inch in diameter, the jet rises seven feet and a half above the mouth of the well; with another jet tube of one-sixteenth of an inch in diameter, it rises thirteen feet; and with another of one-twentieth of an inch diameter of adjutage, between eighteen and nineteen feet. Indeed there is no definite limit to the altitude to which water might be raised by this method, if the size of the syphon be increased, and a sufficient supply of water obtained for working it.

It may appear incredible that a syphon can be so constructed that no definite amount of pressure shall be sufficient to restrain the escape of a portion of water from an opening in the summit of the curve, while in the ordinary syphon, a very small aperture of that point, communicating with the open air, destroys its action instantly; yet this apparatus demonstrates that it can be accomplished, by an extremely simple and compact contrivance, and on any scale that may be required, from a miniature model that will discharge its gill per minute, to an engine that will elevate a hogshead of water in the same space of time.

The apparatus is, moreover, so extremely durable, and so constant and certain in its operation, that it furnishes all the advantages of an aqeduct which brings water from an elevated level. The intervention is capable of application to any good well or water course, which admits of the operation of a syphon, even though such well or water course should be a hundred rods, or more, distant from the lower level which should furnish the working power.

When applied to wells, I think it cannot fail to improve the quality of the water, as it is constantly changed and kept in motion.

Such an invention, if successful, places at the disposal of thousands of farmers, manufacturers, and gentlemen who appreciate matters of taste and luxury as highly as those of mere utility, a supply of water for use or for ornament, which it would be impossible for them to obtain in a more simple, cheap, or economical manner.

When my arrangements are completed for offering my invention to the public, I shall be happy, by your permission, to avail myself of your valuable journal, for the publication of a more minute description of this syphon, accompanied, perhaps, with a drawing. In the meantime I shall take pleasure in showing the practical operation of the one which I have already constructed, to

any of yur numerous subscribers who may be sufficiently interested in the foregoing statements to call and see it.

I am, sir, most respectfully yours,

ERASTUS W. ELLSWORTH.

East Windsor Hill, Ct., July, 1845.

—*Albany Cultivator.*

FATTENING ANIMALS.

There are some rules which may be advantageously adopted in feeding animals, which however obvious they may be, are too often passed over or neglected. Some of these will be specified; and,

1st. *The preparation of food.*—This should be so prepared that its nutritive properties may be all made available to the use of the animal, and not only so, but appropriated with the least possible expenditure of muscular energy. The ox that is obliged to wander over an acre to get the food he should find on two or three square rods; the horse that is two or three hours eating the coarse food he would swallow in fifteen minutes if the grain was ground, or the hay cut as it should be—the sheep that spends hours making its way into a turnip, when if it was sliced it would eat in as many minutes; the pig that eats raw potatoes or whole corn, when either cooked, could be eaten in one quarter of the time now used, may indeed fatten, but much less rapidly than if their food was given them in a proper manner. All food should be given to a fattening animal in such a state that as little time and labour as possible, on the part of the animal, shall be required in eating.

2nd. *The food should be in abundance.*—From the time the fattening process commences, until the animal is slaughtered, he should never be without food. Health and appetite are best promoted by change of food rather than by limiting the quantity. The animal that is stuffed and starved by turns may have streaked meat, but it will be made too slowly for the pleasure or profit of the good farmer.

3rd. *The food should be given regularly.*—This is one of the most essential points in feeding animals. If given irregularly, the animal indeed consumes his food, but he soon acquires a restless disposition, is disturbed at every appearance of his feeder, and is never in that quiet state so necessary to the taking on of fat. It is surprising how readily any animal acquires habits of regularity in feeding, and how soon the influence of this is felt in the improvement of his constitution. When at the regular hour the pig has had his pudding, or the sheep its turnips, they compose themselves to rest, with the consciousness that their digestion is not to be unseasonably disturbed, or their quiet broken by unwonted invitation to eat.

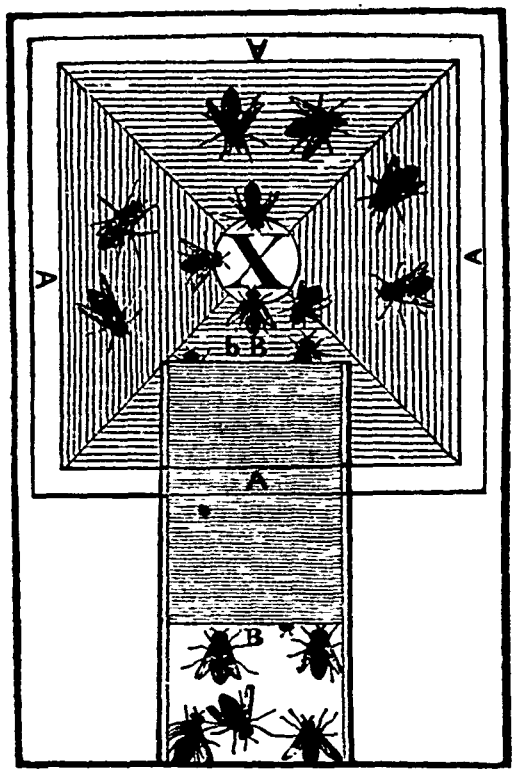
4th. *The animal should not be needlessly intruded upon between the hours of feeding.*—All creatures fatten much faster in the dark than in the light, a fact only to be accounted for by their greater quiet. Some of those creatures that are the most irritable and impatient of restraint while feeding, such as turkeys and geese, are found to take on fat rapidly when confined in dark rooms, and only fed at stated hours by hand. There is no surer proof that a pig is doing well, than to see him eat his meal quickly and then retire to his bed, to sleep or cogitate until the hour of feeding returns. Animals while fattening should never be alarmed, never rapidly driven, never be fed at unseasonable hours, and above all things, never be allowed to want for food.—*Alb. Cult.*

Cruelty to Animals;—In Henry Colman's first Report on European Agriculture, there occurs a passage which does honor to the heart of the writer, and is worth the subscription money of the whole work. After speaking of the aquatic birds kept on the artificial lakes in the Parks of London, the protection there afforded to their lives and the consequent tameness of the birds, he continues, "Man, in general, is a great savage, and a ferocious beast of prey. He makes continual war upon many of the animals below him, not for subsistence merely, but for pleasure. His conduct towards the brute creation shows, too often, how certain he is to abuse unlimited power, and conveys a strong argument against despotic authority. Indeed, his war upon the birds merely as a matter of sport, always makes me look upon him with a degree of shuddering, and feel that a man who can find his pleasure in the wanton destruction of little birds, the most humble of all animals in their claims, the most delicate, innocent and pure in all their tastes and habits, and comparatively useless for food, puts himself beyond the pale of humanity, and could scarcely, with safety, be trusted with a child. It were worth considering always how many of our pleasures are purchased at a most bitter expense of happiness and life to others! Two or three days' coursing, manly and healthful as the exercise on horseback undoubtedly is, did not quite reconcile me to it; and the wailings and shriekings of the affrighted and dying hares in the jaws of the hounds, sounded in my ears for several days afterwards like the cries of expiring children.—*Bost. Colt.*

Increase of the English Agricultural Society.—At the termination of its first year, in 1838, the members of this society were 600 in number, its income £1128. Its present list of members is nearly 9000, and its funded property above £9000.

To Destroy Weeds on Gravel Walks.—Put about an ounce of arsenic in a gallon of hot water, and pour it through the nose of a pot on the walk.

CANAL BOTTOM BOARD FOR A BEE-HIVE.



Messrs. Editors,—I send you a cut of a Canal Bottom Board, which I have used five seasons with perfect success, and have no fears in recommending it to the public as the greatest improvement in the management of the bee-hive, that I have ever seen. It has, with me hitherto proved a perfect preventive against the Moths, Robbers from other hives, the Mouse, and it answers other important uses, which will be specified in their proper places, in the specification of its uses.

The principles and uses of this Bottom Board were patented to me in 1841. It is made of two inch plank, two feet long, and fifteen inches wide, (21 inches in length is sufficient for this width,) in this proportion it may be adapted to any hive in use, of any size or shape, admitting the hive is open at the bottom, and is even, so as to let it set to the hive. It may stand on scantlings, or it may be suspended at the hive's bottom, on staples and links. In either cases the edge of the hive rests on the board at AAAA. The plank is worked out in a Quadruple inclined plane, down to some less than an inch at X, like the hopper to a mill. In the centre at X, a hole is bored with a three inch centre bit, and a tin tube made to fill two inches long which is inserted therein. This tin tube has six half inch holes at equal distances near its lower edge; it is confined in the board by three or four little nails so that it extends down an inch or more below the bottom of the board, and it is lined where the holes are, by crowding in a strip of wire gauze, which needs no other fastening. A cap is made like the cover to a flower box, to fit on the outside with half inch holes in its rim corresponding with those in the projecting tube, and made so loose as to be adjustable, so that ventilation is most easily graduated by turning the cap a little. A Canal, or gutter is made in the top of the bottom board, six inches wide, one inch deep, and covered by fitting in a piece of board from B. to 6 B, so as to form a tunnel one-fourth of an inch high, for the bees to enter and go out at work; this entrance may be contracted, by fitting in billets of wood, or otherwise leaving room for the passing of bees, in proportion to their population.

The advantages of this bottom board, with the principles of ventilation, here adopted by the tin tube, and adjustable cap, has greatly exceeded my expectations, in the developement of uses that had not occurred to my mind when I first put it into use. I constructed this bottom board, or one very similar to it, in 1832, but used a sheet iron slide at X; this would not exclude the moths at X, when the slide was down, and I laid it aside. Early in the spring of 1841, I went into a course of experiments with several of these boards, all made on the same principle, by varying in the power of ventilation, and width of the canal.—Some with the tube and cap, others with a hole only, at X, but I found that any inch and a half hole here, did not give sufficient ventilation in the hottest weather, and in every hive where the cup was omitted, the moths found access to, and made more or less deposit among the combs.

During a trial of five seasons with this bottom board, and adjustable cap, (when this season is finished), no moth has ever succeeded in making a deposit among the combs in a single hive, except in one instance; and in this case, the bottom board not being painted properly, cracked in the winter of 1843–4, so that it did not close entirely during the summer of 1844, hence the result was, two dead larver mouths were found in the adjustable cap when the bees cleaned the hive in the spring of 1845.

Uses of the Canal Bottom Board.—1st—when a swarm of bees are first hived, the adjustable cap should be so graduated as to let the air pass freely in, at that place, until the agitation among

the bees, caused by swarming, has subsided; in the evening the bees will become tranquil, and the cap should be turned so as to exclude all the air at that place, unless the bees manifest a desire for more air by clustering out at the mouth of the canal. The bees will always dictate their master in regard to ventilation, in warm weather, by showing themselves outside the hive. As the cap is a perfect detector of what is going on in the hive, it should be examined occasionally, and perhaps emptied of filth which always finds its way to that place.

2nd—As soon as winter sets in, the adjustable cap must be taken off, and remain off until the bees are ready to clean the hive in the spring. This must never be forgotten by any who would be sure to save the life of the hive; the vapor of the bees in cold weather is so dense that water forms in the hive, and runs down and freezes in the cap. and soon excludes all the air at that place; the tunnel to the canal also is very liable at this season to become obstructed, and the bees may be smothered. It would not be objectionable, but would even be desirable, that the adjustable cap should be returned to its place on the tube, at every warm turn of weather in the winter, if it is surely taken off, as soon as the weather changes cold, inasmuch as it generally keeps them quiet in the hive, and prevents the loss of a vast many of their companions which from ordinary hives sally ont at this time, and are lost by being chilled.

3d.—In the spring, as soon as the bees commence cleaning their tenement, the adjustable cap must be used with care to prevent robbers, this should be examined two or three times a week until the hive is cleaned. It is proper likewise to clean tho bottom board, and whitewash where the edge of the hive rests. Whitewash made of good caustic lime will certainly exclude all bee moths from joints or cracks that are well coated with it, and it is not objectionable to the bees. When the hive is full of bees, moths connot enter, and the cap may be taken off until swarming takes place.

4th—When bees swarm, their departure often reduces the population of the old stock so much, that there are scarcely enough left to guard the tunnel of the canal, and attend to all the other necessary labors of the hive, until it is replenished by young bees which are constantly hatching at this season, hence it will be seen that the cay must not be forgotten a single night after swarming. I have known several hives after two or three swarms had departed, to let the miller enter the tunnel, but in every case she dropped herself down into the cap where she always lays her eggs among the little flakes of comb, billets of bee bread, and other filth, precisely the substance she desires to lay her eggs in, then probably makes her escape the same way she entered, or is found dead with all her eggs in the cap. I have known moths to hatch and grow nearly three fourths of an inch in length in three or four days. During the season of swarming, and until the old stock is well replenished with bees after swarming, is the most critical time, and requires the most diligent care to preserve the old stock from an attack by their enemies. The cap must be examined two or three time a week, until the hive is reinforced, so that the bees can guard the tunnel to the canal, and keep out those nightly intruders, then the hive is safe so far as the moths are concerned. As the moths may enter some feeble hives in the spring before swarming, and through the whole summer season, it is best to examine occasionally, and empty the cap. This is scarcely a minutes' work, but "no pains no gains." No one should use this bottom board who will neglect the care of the adjustable cap, and if the cap is not used, I know of no hive that will admit the moths and robbers so freely as this. When this bottom board and adjustable cap is used with care, the healthy condition of the young broods are secured from chills in the spring and fall, which is absolutely necessary to secure profits from the Apiary. Thousands of swarms perish yearly, and are rendered weak and unprofitable by a chill among the young in the early and latter months of the breeding season; bees that hatch early perform the principle duties and labours of the summer campaign, and die before winter sets in, and those that are born late, say in August and September, are almost the only tenants of the hive in the spring following. This is a fact which may be doubted by some, nevertheless it is true, but may require a dissertation at come future time, to convince the sceptical and superficial observer. This Bottom Board is admirably fitted for southern and western Apiraies, as well as northern. I also have a large number of classes of bee hives which were patented in 1841, swarmers and non-swarmers, so constructed that they may be changed from one to the other by entering slides only, or they may be divided or subdivided into several swarms, when the season is favourable, with no trouble except entering slides, of which I may send you some cuts and specifications at a future time.

JOHN M. WEEKS.

Near Middlebury, Vermont, 1845.—*Bos. Cult.*

LIQUID MANURE,

The Wealth of Towns—and, we may add, of Farms also.—This tract was referred to by the Duke of Richmond, at the meeting of the Society at Shrewsbury, on Thursday last. He said—"I think that on this subject we might with advantage take a leaf from the Chinese. I think we do allow to run to waste a great quantity of manure in this country. I believe that instead of allowing the water to flow into and out of our yards, by which we spoil a great quantity of our manure, we ought to have tanks for the reception of this liquid manure, and I would recommend to the landlords to build these tanks."

We called the particular attention of our readers to this subject last year. It was then shown what loss was sustained on every farm where the liquid and soluble portions of the manure made on it were allowed to waste. But there is a great difficulty in the way of applying this liquid manure. It is easy to fix it mechanically and chemically—to accumulate it in tanks, and deprive it of volatility; but it is by no means easy to find an economical mode of applying it. The use of the water-cart on extensive farms is impracticable. If the liquid be applied in its natural condition, the plants which receive it will be injured—perhaps burnt up by its strength; if it be diluted to the proper degree, its bulk and its weight become such that the expense of its carriage destroys its value to the farmer. If we exclude its use in irrigation, perhaps the only economical mode of applying home-made liquid manures is by soaking the ordinary farm-manure with it. Care must then be taken to hinder its dilution by water. All the runs of urine in a farm steading should be directed to one point, around which stores of dry absorbent vegetable rubbish, capable of fermentation and decomposition have been accumulated during comparatively idle periods, and around which also it is customary to place the dung-heaps. Let the liquid be received into a vessel capable of holding two or three days' produce of it; and at such intervals during the winter, let this vessel be regularly emptied on the meterials here gathered together. Of course it will be well to place in this vessel every time it is emptied such a quantity of sulphate of iron or other fixer of ammonia as shall be able to neutralize all the ammonia which such a quantity of urine is capable of generating during fermentation. The liquid manure thus preserved will be applied to the land in a properly diluted condition; diluted not by a useless material such as water, but by valuable decomposing vegetable matter.

The pamphlet before us, however, refers to liquid manure as the wealth of towns; unquestionably a great source of wealth to those who would dispose of it, and a vastly greater source of wealth to those who would purchase it, is now altogether neglected in the present management of the sewerage of our towns. "It has been calculated that the human refuse of London is worth annually five hundred thousand pounds." The great waste under the present system of neglecting these sources of wealth must ultimately force itself on public attention, and we doubt not that when in the opinion of our capitalists this country shall have been sufficiently intersected by railroads, the next great engineering operation of the day will be the execution of plans for collecting, storing, and transmitting, the sewerage manures of towns. Whether the method adopted be that of dilution by water, and conveyance by pipe or channel to *water-meadows*, or that of all possible condensation and desiccation, and conveyance by barges, &c., to the place of its application on *arable land*, we may be assured with the author of this pamphlet that "ere long measures will be adopted in all large towns for the collection and sale of this most important substance."—*Lon. Eng. Ag. Gaz.*

PROPORTION OF BUTTER IN MILK.

Every farmer's wife knows that there is a vast difference in the milk of cows, in regard to the quantity of butter that they will afford. We once owned a cow which gave a great flow of milk, but from which very little butter could be obtained.

Boussingault, in his 'Rural Economy,' relates the following experiment. From 100 lbs of milk he obtained

Cream, ...	15.60
White curd cheese, . .	8.93
Whey, ...	75.47
	100.00

The 15 pounds and 60 hundredths of cream yielded by churning—

Butter, .	3.83 or 21.2 per cent.
Buttermilk,	12.27.

The reckoning with reference to 100 lbs. of milk, consequently stands as follows—

Cheese, ...	8.93
Butter, ...	3.33
Buttermilk, ...	12.27
Whey, ...	75.47
	100.00

He goes on to state that, taking the whole of the milk obtained, and treated at different seasons of the year, he finds that 26,000 lbs. of milk yielded 1080 lbs. of fresh butter, which is at the rate of 3 per cent.—*Alb. Cult.*

GOOD BREEDING.

The striking difference observable between a well and ill bred person need not be the subject of any extended observations, because it is universally seen and admitted. How to acquire good manners is a far more interesting inquiry, and we wish there was some royal road to the acquisition. It would indeed be delightful if the world around us could be well mannered at once, and that we ourselves should henceforth remember carefully what is due to others.

We imagine that to arrive at perfection in good manners requires some circumstances in co-operation and coincidence that do not happen to all. Early training,—we mean by that, precept and example—is quite indispensible to the acquisition of good manners in after life. Indeed it is only a long and assiduous observance of the principles on which true politeness is based, and the application of them to the cases constantly occurring, which produce that refinement, self possession, regard for the feelings of others, and that sagacious and considerate foresight of kindness which so eminently contribute to form good manners and so decidedly indicate good breeding.

The ability to address well, to talk well, to observe the observances of the world, to do the honors of one's house, is very proper for those who are so placed in life as to be under the necessity of assuming a certain appearance and character. But there may be connected with this very exterior, real vulgarity and meanness, and good breeding may be an entire stranger to the ornamental shell that covers an unrefined heart.

Many people get on very well in the world, and mingle in society without any doubt of their own success in it, who are not well bred. But they never suspect it, and yet, not a day passes without some violation on their part of even the lesser obligation of bienseance.—Almost every transaction of business and every occurrence in society might very properly be regulated by the standard of good manners. We see no occasion whatever, in which civility, kindness and courtesy, may not be employed, to some extent, briefly or not, as circumstances permit. For every thing there is a time and place; a proper or improper mode of expressing ourselves is always at our option; kindness or unkindness of manner is within our choice.

To be thoroughly well bred, however, requires education, early training, and real goodness of heart.

To those who have not had and have not now these advantages, some hints may be offered so far as personal behaviour is concerned, and when we enumerate some of the transgressions against good manners, we will perceive they are more common than he might have supposed. Among them says a good critic, is "loud and harsh speaking, making noises in eating or drinking, leaning awkwardly while sitting, rattling knives and forks when at table, starting up suddenly and rushing unceremoniously out of a room, tossing anything away with indifference or contempt; receiving anything without thanking the giver, standing in the way of any one when there is little room to pass, (a grievous practice in this city,) stepping before any one who is looking at any object particularly, pushing or jostling any one without apologising, taking possession of a seat that belongs to another, intruding opinions where they are not sought or where they give offence, leaving acquaintances in the street or in a private circle without bidding them good bye or courteously saluting them, slapping any one familiarly on the shoulder, interrupting a person who is in conversation, telling long, tedious, or humdrum stories, whispering in company, making remarks on the dress of those about you, or upon things in a room where you are, flatly contradicting a person—using slang phrases, a (very common habit,) interlarding our speech with foreign phrases (well hit off in the new comedy of fashion,) repeating the words, says he, and says she, you know, and you understand, helping yourself first at the table, using a fork as a toothpick, scratching the head, putting the fingers in the ears, cleaning or paring the nails before company, mentioning the price of anything, when it is offered to a guest, asking questions which give pain, and neglecting to answer letters."

Many other violations of good breeding, as coarse and obvious as these, might be mentioned if we had time We only noticed these which are most constantly occurring, and which may be reformed. Our readers will, we trust, attribute to us the right motives for having brought up this array of bad habits.—If it should lead a single person to undertake the reformation of a single fault, we shall be satisfied.

To cure a stifled Horse in two hours time.—Take one gallon of urine and put therein a handful of junk tobacco, boil down to one quart; then add two ounces of oil of spike, one ounce of oil of amber, two spoonsful of spirits of turpentine, and two spoonsful of honey. Put it into a jug, and cork it tight for use.

Process of Application.—Rub the stifle bone hard with the mixture fifteen or twenty minutes; then dry it in thoroughly with a red hot fire shovel, then ride the horse forth and back one hundred rods. Repeat the above two or three times, and the cure will be effected. J. F. GODDARD.

Norwich, Ct. Sept. 15th, 1845.—*Alb. Cult.*

Effect of Nitrate of Soda on Grass Lands.—Mr. Ebenezer Bishop, of Seekong, says he has been making use of *nitrate of soda* on his grass lands, he thinks it has greatly benefitted his crops. He has sown 100 lbs. broadcast, to the acre, he thinks he has four-fold the grass that he would have had without it. He states that there is danger of killing vegetation if too much is sown.

Mr. Bishops's lands, consisting of a sandy loam, are the right kind of soil for the application of such substances. Ashes, potash water, pearlash, soda, &c., cannot fail to aid such a soil, and we should not marvel to see a quadruple harvest on sowing 100 weight of nitrate of soda upon an acre of it. We have never made trial of this article on our own grounds, but others have tried it with success.—*Me. Cultivator.*

BARN YARDS.

Vegetables, like animals, cannot thrive or subsist without food; and upon the quantity and quality of this depends the health and vigor of the vegetable as well as of the animal. Both subsist upon animal and vegetable matter, both may be surfeited with excess—both may be injured by food not adapted to their habits, appetites, or their digestive powers. A hog will receive no injury, but great benefit from free access to a heap of corn or wheat, where a horse or cow will be apt to destroy themselves by excess.—The goat will thrive upon the boughs and bark of trees, while the hog would starve. The powerful, robust maize will repay, in the increase of its grain, for a heavy dressing of strong dung, for which the more delicate wheat will requite you with very little but straw. The potato feeds ravenously, and grows luxuriantly upon the coarsest litter, while many of the more tender exotics will thrive only on food upon which fermentation has exhausted its powers. But here the analogy stops: for while the food of the one is consumed in a sound, healthy, and generally solid state, the food of the other before it becomes aliment, must undergo the process of putrefaction or decomposition, and be reduced to a liquid or æriform state. * * * * * The urine of the stock, which constitutes a moiety of the manure of animals, is all lost. The slovenly and wasteful practice of feeding at stacks in the fields where the sole of the grass is broken, the fodder wasted, and the dung of little effect, is still pursued. And finally the little manure which does accumulate in the yards, is suffered to lie till it has lost full half of its fertilizing properties, or rotted the sills of the barn; when it is injudiciously applied, or the barn moved to get clear of the nuisance. Again: none but a slothful farmer will permit the flocks of his neighbors to rob his own of their food; yet he often sees, but with feeble efforts to prevent it, his plants smothered by pestiferous weeds and plundered of the food which is essential to their health and vigor. *A weed consumes as much food as a useful plant.* This to be sure, is the dark side of the picture, yet the original may be found in every town, and in almost every neighborhood.

It is surprising that under such management our arable grounds should grow poor, and refuse to labor its accustomed reward? Can it be considered strange that those who thus neglect to feed their plants should feel ths evil of light purses as well as of light crops? Constant draining or evaporation, without returning anything would in time exhaust the ocean of its waters. A constant cropping of the soil without returning anything to it, will in like manner exhaust it of its vegetable food and gradually induce sterility. Neither sand, clay, lime or magnesia, which are the elements of all soils, nor any combination of part or all of them, is alone capable of producing healthy plants. It is the animal and vegetable matter accumlated upon its bosom or which art deposits there, with the auxiliary aid of these materials diffused in the atmosphere, that enables the earth to teem with vegetable life and yield its tribute to man and beast.

I will now suggest a cheap and practicable mode of *providing food for vegetables*, commensurate to the means of every farmer of ordinary enterprise; and that my suggestions may not be demed theoretical, I will add, that I "practice what I preach."

The cattle yard should be located on the south side of, and adjoining the barn. Sheds, substantial stone walls, or close board fences should be erected at least on the east and west sides, to shelter the cattle from the cold winds and storms; the size proportioned to the stock to be kept in it. Excavate the centre in a concave form, placing the earth removed upon the edges or lowest sides, leaving the borders ten or twelve feet broad, of a horizontal level, to feed the stock upon, and from two to five feet higher than the centre. This may be done with a plow and scraper, or shovel and hand-barrow, after the ground is broken up with the plow. I used the former and was employed a day and a half, with two hands and a team, in fitting two to my mind. When the soil is not sufficiently compact

to hold water the bottom should be bedded with six or eight inches of clay well beat down and covered with gravel or sand. This last labor is seldom required except where the ground is very porus. My yards are constructed on a small loam, resting on a clay subsoil. Here should be annually deposited as they can be conveniently collected, the weeds, coarse grass and brakes of the farm; and also the pumpkin vines and potatoe tops. The quantity of these upon a farm is very great, and are collected and brought to the yard with little trouble by teams returning from the fields. And here also should be fed out or strewed as litter, the hay, stalks and husks of Indian corn, pea and bean haulm, and the straw of grain not wanted in stables. To still farther augment the mass, leached ashes and swamp earth may be added to advantage. These materials will absorb the liquid of the yard, and, becoming incorporated with the excrementitious matter, double or treble the ordinary quantity of manure. During the continuance of frost the excavation gives no inconvenience, and when the weather is soft the borders afford ample room for the cattle. In this way the urine is saved and the waste incident to rains, &c., prevented. The cattle should be kept constantly yarded in winter, except when let out to water, and the yard frequently replenished with dry litter. Upon this plan from ten to twelve loads of unfermented manure may be obtained every spring for each animal; and if the stable manure is spread over the yard, the quality of the dung will be improved and the quantity proportionably increased. Any excess of liquid that may remain after the dung is removed in the spring can be profitably applied to grass, grain or garden crops. It is used extensively in Flanders and in other parts of Europe.—*Buel.*

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Toronto, Jan, 1845.