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THE CANADA FARMER

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The Field.

Familiar Talks on Agricultural Principles.

MORE ABOUT MANURE-MAKING.

THE great importance of this subject justifies a little further talk about it. And in this article we propose to let others besides ourselves have something to say about the matter.

One of the ablest of British American agriculturists has said, "More than one-half of the manure made in the provinces is absolutely wasted from ignorance and inattention; and the other half is much more unproductive than it would have been under more skilful direction. We have almost no pits dug upon a regular plan, for the collection and preservation of the dung, which, from time to time, is wheeled out of the barn. Sometimes it is spread out on the green sward; sometimes cast carelessly in court, or adjoining yard; but seldom is an excavation made, purposely for retaining the juices which run from it. These are suffered either to stream along the surface, or sink into the earth, and in either case, their utility is sacrificed to inattention or ignorance. This is no more, however, than half the evil. The exhalations which arise from the ardent influence of the summer's sun, or from the natural activity of fermentation, are permitted to escape freely, and to carry with them all the strength and substance of the putrescible matter."

Professor Dawson has an excellent chapter on this subject in his "First Lessons in Scientific Agriculture," from which we make a few extracts. He says:

"There is, no doubt, much more attention given to this important subject now; but still, the waste of barn-yard manure, both solid and liquid, is a great evil, and a fruitful cause of agricultural poverty, and failures of crops. About two years ago, I had referred to this subject in a public lecture, and happened, immediately afterward, to drive ten or twelve miles into the country, with an intelligent friend, who doubted the extent of the loss. We were driving through an old agricultural district, and, by way of settling the question, determined to observe the capability of each barn-yard that we passed, for the preservation of manure. It was early in spring, and we found scarcely one barn that had not its large manure heap perfectly exposed to the weather, and with a dark stream oozing from its base into the road side ditch, or down the nearest slope; while there was evidently no contrivance whatever, for saving the liquid manure of cattle. Here was direct evidence, that a large proportion, probably not less than one-third, of the soluble part of the solid manure, and the whole of the liquid manure, which all agricultural chemists think to be at least equal in value to the solid part, was being lost. In other words, each farmer was deliberately losing between one-half and two thirds of the means of raising crops, *contained in his own barn-yard. What would we think* of a tradesman or manufacturer, who should carelessly suffer one half of his stock of raw material to go to waste; and the case of such farmers is precisely similar. The results of chemical analysis will enable us to form more precise ideas of the nature and amount of this waste.

Composition of Solid Stable Manure (Richardson.)

Carbon	37.40
Hydrogen	5.27
Oxygen	25.52
Nitrogen	1.76
Ashes	30.05
	100.00

Composition of the Ashes of Stable Manure (Richardson)

Potash	3.22	Soluble in water.
Soda	2.70	
Lime	0.34	
Magnesia	0.26	
Sulphuric Acid	3.27	
Chlorine	3.15	
Silica	0.04	
Phosphate of Lime	7.11	Soluble in Hydrochloric Acid.
" of Magnesia	2.26	
" of Oxide of Iron	4.68	
Carbonate of Lime	9.34	
" of Magnesia	1.63	
Silica	27.01	
Sand, &c.	34.96	
	100.00	

Composition of Liquid Stable Manure (Boussaingault.)

	Horse.	Cow.
Urea	31.00	18.48
Hippurate of Potash	4.74	16.51
Lactate of Potash	20.09	17.16
Carbonate of Magnesia	4.16	4.74
" of Lime	10.82	0.55
Sulphate of Potash	1.18	3.60
Chloride of Sodium	0.74	1.52
Silica	1.01	
Water, &c.	910.76	921.32
	1000.00	1000.00

Urea, the principal organic ingredient of Urine, consists of—

Carbon	20.0
Hydrogen	6.6
Oxygen	46.7
Nitrogen	26.7
	100.0

"Urea is very rich in nitrogen. In decomposing, it changes into carbonate of ammonia, which rapidly escapes, unless prevented by some absorbent material, as charcoal, or by the chemical action of sulphuric acid or gypsum."

"In the above table, we see that the liquid manure contains large quantities of potash and soda; and that a large portion of it is urea, a substance very rich in nitrogen, and, in fact, quite similar to the richest ingredient of guano. Johnson estimates the value of 1000 gallons of the cow, to be equal to that of a hundred weight of guano. The farmers of Flanders,—who save all this manure in tanks,—consider the annual value of the urine of a cow to be $10."

"In the solid manure, we perceive that there is little nitrogen. This element, so valuable for producing the richer nutritious parts of grain and root crops, is principally found in the liquid manure. The little that is present, however, in the solid manure, is soon lost in the form of ammoniacal vapours, if the dung be allowed to ferment uncovered. The other organic matters are less easily destroyed, unless the dung be allowed to become "fire-fanged, in which case the greater part of it is lost. In the ashes, or inorganic part, we find all the substances already referred to as constituents of fertile soils; and many of the most valuable of them are, as the manure decomposes, washed away, and, along with a variety of organic matters, appear in the dark-coloured water which flows from exposed dung-hills. It is not too much to say, that the loss of the volatile and soluble parts of manures, on ordinary upland soils, cannot be repaid by any amount of outlay in the purchase of other manures, that our farmers can afford; and we can plainly perceive that, that the prevailing neglect in this one particular, is sufficient for the deterioration of once fertile farms. How, then, is this waste to be prevented? In answer to this, I shall merely indicate the principles on which the means adopted for saving manures should be founded, with a few general hints on the best modes of carrying them into effect."

"1. The solid manure should be covered with a shed or roof, sufficient to protect it from rain and snow. Its own natural moisture is sufficient to promote, during winter, a slow and beneficial fermentation. Snow only prevents this from going on; rain washes away the substance of the fermented manure."

"2. The ground on which the manure heap rests, should be hollowed, and made tight below with clay or planks; and in autumn, a thick layer of bog mud, or loam, should be placed on it, to absorb the drainings of the manure."

"3. When the manure is drawn out to the field, it should be covered as soon as possible, either in the soil, or, if it must stand for a time, with a thick coating of peat or loam,—a pile of which should be prepared in autumn for this purpose. All unnecessary exposure should be avoided."

"4. Where gypsum can be procured cheaply, it should be strewed about the stables, and on the manure heap, for the purpose of converting violate ammoniacal vapours into *fixed* sulphate of ammonia. This will also render the air of the stables more pure and wholesome."

"5. It must be borne in mind, that the richest manures are the most easily injured. For example, many farmers think horse manure to be of little value. The reason is, that when exposed it rapidly enters into a violent fermentation and decay, and its more valuable parts are lost. Such manures require more care than others, in protection and covering, so as to moderate the chemical changes to which they are so liable, and to save the volatile and soluble products which result from them."

"6. The liquid manure should be collected, either in the pit or hollow intended for the other manure, or in a separate pit prepared for the purpose. The latter is the better method. If a tight floor can be made in the stable, it should be sloped from the heads of the cattle, and a channel made, along which the urine can flow into the pit. If the floor is open, the pit should be directly beneath it, or the ground below should be sloped to conduct the liquid into the pit. In whatever way arranged, the pit should be tight in the bottom and sides, and should be filled with soil, or peaty swamp mud, to absorb the liquid Gypsum may also be added with great benefit; and the urine pit may very well form a receptacle

for door-cleanings, litter which may accumulate about the barn, and every other kind of vegetable or animal refuse. These additional matters may occasionally be protected, by adding a new layer of peat or soil to the top. The pit for liquid manure should be roofed over. A method much followed in Britain and the continent of Europe, is to collect the urine in a tank, and add sulphuric acid to prevent waste of ammonia. When used, the liquid is diluted with water, and distributed to the crop by a watering cart. This is too expensive for most of our farmers; but when it can be followed, it will be found to give an astonishing stimulus to the crops, especially in the dry weather of spring. Gypsum may be put into the tank, instead of sulphuric acid."

"In a prize essay on manures, by Prof. Way, published by the Royal Agricultural Society of England, the following analysis is given of the drainings of a dung-heap, composed of the mixed manure of horses, cattle, and sheep, and in a well rotted condition. The fluid examined was that washed out with rain water, and was of a deep brown colour. It contained in each imperial gallon 764.64 grains of solid matter, of which 395.66 were volatile and combustible, and 368.98 incombustible or ashes. Its composition was as follows:—

I. COMBUSTIBLE PART.

Ammonia, in a soluble state	36.25	
do in fixed salts	3.11	
Ulmic and humic acids	125.50	
Carbonic acid	88.20	
Other organic matters (containing 3.59 of Nitrogen)	142.60	
		395.66

II. COMBUSTIBLE PART.

Soluble silica	1.50	
Phosphate of lime, with a little phosphate of iron	15.81	
Carbonate of lime	34.91	
Carbonate of magnesia	25.96	
Sulphate of lime	4.36	
Chloride of sodium	45.70	
Chloride of potassium	70.50	
Carbonate of potash	170.54	
		368.98
Total per gallon		764.64

"It will be observed that the combustible part contains a large amount of ammoniacal matter, and the rest is principally the richest humus or vegetable mould; while the incombustible part contains all the ingredients in the ashes of cultivated plants, and these in a soluble state, ready to be absorbed by the soil and taken up by the roots. This table, in short, affords the most conclusive evidence of the immense loss sustained by the farmer who allows his stable manures to be weathered, and their soluble part washed away by the rains. No economy in other respects, and scarcely even the most costly additions of artificial manures, can compensate this waste. This subject is, in all its details, deserving of the careful study of every practical farmer."

Culture and Feeding Properties of Kohl-Rabi.

KOHL-RABI is deserving of a prominent place among the farm crops of Canada. It resists the extremes of heat and cold to which our root crops are frequently subjected; and on heavy lands, where the turnip, too generally, proves a failure, kohl-rabi may be grown with success. Among the more advanced "old country" agriculturists, this valuable specimen of the *brassica* tribe, is popularly known as "the bulb of dry summers." As compared with the turnip, it may be said to be free from disease and the depredations of insects; while in feeding properties, it is superior either to swedes or mangolds. Horses and all kinds of farm stock are particularly fond of it; and, as a food for milch cows, it is especially valuable as it not only causes an increased yield of richer milk, but both the milk and butter are free from any such unpleasant taste as is produced by turnips. The leaves of the kohl-rabi are nearly, if not quite, equal in feeding value to the bulb. They both contain about twice as much albuminous compounds as the best swedes. The following analyses of the bulbs and leaves are given, by Dr. Anderson, the able Chemist of the Highland and Agricultural Society of Scotland:—

	Bulbs.	Leaves.
Water	86 74	86.68
Albuminous Compounds	2.75	2.37
Respiratory principles	8.62	8.29
Fibre	0.77	1.21
Ash	1.12	1.45
	100.00	100.00
Nitrogen	0.44	0.38

Speaking of this crop, the distinguished agricultural writer, Mr. Henry Stephens, says:—"As kohl-rabi holds the same position as a crop as the turnip, its culture is very similar; but while turnips affect the lighter soils, kohl-rabi thrives on the stronger, so that it may be raised where turnips cannot be. Specimens of kohl-rabi have been raised in Scotland weighing from 5 to 7½ lbs., in Ireland individual bulbs have attained the weight of 14 lbs., and in England they commonly reach 8 to 10 lbs. The advantages which kohl-rabi is said to possess over swedish turnips, by those who have cultivated it in England and Ireland, are these:—cattle, and especially horses, are fonder of it; the leaves are better food; it bears transplanting better than any other root; insects do not injure it; drought does not prevent its growth; it stores quite as well or better; it stands the winter better; and it affords food later in the winter, even in June."

A paper on the kohl-rabi by P. Lawson & Son—the eminent seedsmen—appeared in the *Journal of the Royal Agricultural Society of England.* (1859) We make the following extracts respecting the special features of the plant, and the various points of its cultivation, &c.:

"All soils are suited to its cultivation, but it prefers heavy lands, even those approaching to stiff clays, and it can be grown where turnips cannot. Soil should be in fine tilth, well worked, and farmyard manure ploughed-in in the autumn. In the spring it should be grubbed and thoroughly pulverized. It requires heavy manuring: phosphatic manures, with common salt added, are most suitable for it. Peruvian guano and other nitrogenous manures should be avoided. Seed should be sown in drills 12 inches apart. A bed 5 yards square will afford sufficient plants for one acre of land, and 8 oz. of seed will be necessary for the seed-bed. Drills should be 27 inches in width, and plants should be singled to 18 inches. While growing, the horse-hoe must be kept in continual requisition, until the spreading of the leaves prevents the operation being performed. The average weight per acre is in England from 26 to 40 tons; and in Ireland from 30 to 35 tons. Every description of stock will eat the kohl-rabi with avidity. In consuming the crop, sheep may be folded on the ground; but, if given in the yards to cattle, the bulbs should be sliced or pulped. For pigs they should be steamed or boiled. For cattle and horses it affords true nourishment when boiled with grain. For milch cows it is invaluable, giving to milk or butter none of that disagreeable flavour which results when they are fed on turnips. For ewes and lambs it is as fine food as they can have in March and April; and when the ewes are lambing, it is found greatly to increase the supply of milk. Kohl-rabi is, so far as at present known, subject to no diseases except "clubbing" and "anbury." If hares or rabbits exist in the neighbourhood of the crop, they are sure to prove very destructive unless means of precaution are taken. The leaves are of equal value with the bulbs in nutritive properties. The plant for feeding purposes is twice as valuable as ordinary turnips, and materially surpasses the best swedes in point of composition and feeding value. It bears transplanting better than any other crop, and is invaluable, therefore, for filling up blanks in turnips, swedes, or potatoes. The kohl-rabi can withstand any amount of drought, if the operation of transplanting has been successful. The most intense frost does not affect it; it stands the winter well, and affords good feed even to the end of spring."

Domestic Poudrette.

PRIVY pits where they exist are but rarely water-tight, and permit the greater part of the urine and other fluid contents to leak away, thus causing the loss of a good deal of the most valuable matter, such as the potash salts and the soluble phosphates. The following statement will show the great value of the excrements of man. In the fortress of Rastadt and in the soldiers' barracks in Baden generally, the privies are so constructed that the seats open, through wide funnels, into casks fixed upon carts. By this means, the whole of the excrements, both fluid and solid, are collected without the least loss. When the casks are full, they are replaced by empty ones.

The peasants about Rastadt and the other garrison towns, having found out at last by experience, the powerful fertilizing effect of these excrements upon their fields, now pay for every full cask a certain sum (still rising in price every year), which not only has long since repaid the original outlay, besides covering the annual cost of maintenance, repairs, &c., but actually leaves a handsome profit to the department.

The results brought about in these districts are highly satisfactory. Sandy wastes, more particularly in the vicinity of Rastadt and Carlsruhe, have been turned into smiling corn fields of great fertility. Assuming, for the sake of illustration, that the peasants had to furnish the whole corn produced by means of this manure, to the military administrations of the several garrison towns, there would thus be established a perfect circulation of these conditions of life, which would provide 8,000 men with bread, year after year, without in the least reducing the productiveness of the fields on which the corn is grown, because the conditions required for the production of corn being always returned to the soil, would continue to circulate and yet always remain the same.

What is said here about the corn—constituents applies, of course, equally to the constituens of meat and vegetables, which, returned to the field, will reproduce as much meat and vegetable matter as has been consumed. The same relation that exists between the inhabitants of the barracks in Baden and the fields supplying them with bread, exists equally between the inhabitants of towns and the country around. It it were practicable to collect, without the least loss, all the solid and fluid excrements of all the inhabitants of towns, and to return to each farmer the portion arising from the produce originally supplied by him to the town, the productiveness of his land might be maintained almost unimpaired for ages to come, and the existing store of mineral elements in every fertile field would be amply sufficient for the wants of the increasing populations. At any rate that store is, at present, still sufficient to do so, although the number of farmers who take care to cover by an adequate supply of suitable manures the loss of mineral matters sustained by the land, in the crops grown on it, is but small, in proportion to the whole agricultural population. However, sooner or later, the time will come when the deficiency in the store of these mineral matters will be important enough in the eyes of those who are at present so void of sense, as to believe that the great natural law of restoration does not apply to their own fields; and the sins of the fathers, in this respect, will also be visited upon their posterity. In matters of this kind, inveterate evil habits are but too apt to obscure our better judgment. Even the most ignorant peasant is quite aware that the rain falling upon his dung-heap washes away a great many silver dollars, and that it would be much more profitable to him to have on his fields what now poisons the air of his house and the streets of his village; but he looks on unconcerned, and leaves matters to take their course, because they have always gone on in the same way.

BARON JUSTIS VON LEMIG.

CHEMICAL EFFECT OF UNDER DRAINAGE.—Every one must have observed how our cultivated plants, our crops and trees, dislike stagnant water; and how their roots travel along its surface under-ground, directly they reach it. The existance of stagnant water implies the absence of air, which is as essential to the development of vegetable growth in the soil as it is to our existence above the surface, and therefore we can readily understand how essential it is to render the depth of the soil which our plants require for their perfect development, percolative or permeable free or active. This is not only required because roots will not penetrate a bed of stagnant water, and will prosper in a deeper feeding ground, but because there are in soils organic and inorganic ingredients which require alterations only to be effected by the absorption of gases from the atmosphere. By drainage you not only afford to plants the deeper bed to sustain them, at the rate of 100 tons per acre for every inch of depth gained, but you correct the influence of injurious constituents of the soil; and, what is more, you carry into the deepened bed those fertilizing ingredients which are constantly associated with fresh air and moving water.—*F. Bailey Denton.*

Farm Profits.

There is one important point upon which the majority of farmers and myself have never agreed, and probably never shall agree, and that is whether my farming pays a profit on the farm capital invested. I do not see many landlords taking their cue from their tenants think as they do. I make no complaint of this. On the other hand, there is a comparatively small but most important agricultural minority who know and admit that my farming does pay, in fact, that it must pay, judging from the soundness of the theories upon which it is based. This minority is composed of practical men—intelligent, enquiring, honest and calculating,—who throw aside antiquated prejudices, and seek for and rely upon obvious and visible results; men who test theories by comparative experiments on a sufficient but uninjurious scale, and thus verify or disprove them. I do not expect my statements of facts to be believed by the general mass. It would be unreasonable to do so, because I know that many, who would not impute falsehood to me, believe that I am deceived by my men or my bailiff, and that I am personally ignorant of the true state of the case. They do not, or will not, believe that for more than 25 years I have watched closely every operation in agriculture, with a view to compare various practices, and thus deduce a preferable and correct result. In fact, I may safely say that I have done so for 40 years, but most practically during the last 25 years; while I have done this, I have also endeavoured to discover and trace the *causes* of successful results; and here I must pay my tribute of respect, admiration, and gratitude to those men of science who have, for the first time, illuminated the hitherto dark path of agricultural progress, and prevented that unprofitable stumbling which has cast away millions of agricultural capital in needless and fruitless experiments.

But of what use is that bright light of science to those who will not avail themselves of it, but prefer the darkness of antiquated prejudices and local self-satisfaction? There is one very important reason why it is inconvenient to believe in agricultural amendment. Improvement in agriculture can only be carried out by an increased outlay of capital, or, failing that, by a considerable diminution in the extent of holding either of landlord or tenant. The pride of proprietorship rebels against this diminution of area, and the same feeling, aided by doubts as to the profit of increased investments, acts in degree upon the tenant. Besides, there is nothing as a rule more undefined and various than the most profitable amount of acreable capital required for profitable farming. Both landlords and tenants are quite "at sea" on this subject, and yet this is perhaps one of the most vital questions affecting profit.

It is not at all uncommon for poor farms in poor neighbourhoods to be taken with a capital of £2 or less per acre, and I believe that the average capital of the United Kingdom is under £4 per acre. The result is a miserable gross produce of probably £3 1s per acre. How can such tenants complete successfully with others investing from £9 to £15 per acre on the same description of soil, and getting a gross return of £10 to £13? The rent, tythes, rates, seed, horse-labour and manual labour become increased on the small investment from 100 to 300 per cent. The result is a gradual wasting away of capital, the poverty of the tenants reacting on the landlord, and causing diminished rents; for we know that low rents and bad farming generally go hand in hand. I see so many instances where the over-holding and diminutive produce absorb the tenant's capital and send him to the world penniless that it is quite afflicting. A bad season, like the present, upon a poor, unimproved and ill-farmed heavy clay farm, will mulct the tenant of 20s. to 40s. per acre. I know in one case near me, that in 1861 and 1862 the tenant lost £1300 on 300 acres in two years' holding, and quitted his farm a ruined man. I may in some future paper trace the causes of loss to noblemen and gentlemen who attempt to farm their own land and cannot make it pay. The production of maximum crops must be our sheet anchor. These can only be produced by a sufficiency of capital and practical knowledge. Recent statistics have shown that we have (in cattle, sheep, and pigs, reduced to sheep) only about one sheep per acre—that is also the manure of one sheep per acre—in the United Kingdom. Can we then wonder at the smallness of the crops or the necessity for foreign imports of meat and bread? We have no statistics of poultry; but it is evidently equally as deficient as our meat supply—for we import *daily* from abroad one million of eggs!

The quantity of corn we produce is evidently dependent on the quantity of meat we make, for the farmer who increases his meat production will in the same ratio increase his supply of manure—the one thing wanting to increase our, at present, small crops of grain. Where water and manure are available, the advantages of irrigation by hose and jet are too apparent to admit of a doubt or question. On the 31st of May I carted 15 tons of fine Italian Rye-grass hay, the produce of 5 acres, producing a value of £14 to £15 per acre, from poor land. This very field produced a crop of Barley last year. It may be useful to state how we make this heavy crop of Grass into good hay. The horse hay shaker follows the mowers, and keeps the Grass flying through the air from the moment it is cut. It is not cocked the first evening. The second day it is again shaken until evening, and then cocked before the dew falls. The third day it is pulled down from the cocks, and again shaken all day. It is then loaded on numerous carts and waggons, and left to heat a few days, and then stacked. Thus in three days and two nights the crop was cut, made, and carted. To make good Rye-grass it should be "got up" green. It is the greatest possible mistake to let it run to seed, or to leave it exposed long on the swathe or rake row. The cost of cutting was 3s per acre, or 1s. per ton of hay. Italian Rye-grass hay, sewaged and well made, surpasses Clover or any other hay in real value. For such very heavy crops of Grass, two horses should be attached to the hay-shaker, and it should be set to revolve more rapidly than for ordinary crops. After again irrigating, some portion of the field which was mowed earlier for soiling has again thrown up a crop nearly a yard high, and yet there are people to be found who say this will not pay. The fact is, that much of the odium of sewage irrigation has arisen from bungling machinery, ill-arranged and miscalculated.—*J. J. Mechi, Tiptree June* 13, 1866.

Good Tools and Farmers' Clubs.

A young man away from home and out of money applied for work and was told, "I have nothing for you to do." He replied, pointing to a fallen tree not far from the house, "If there was such a thing as that so near my house, I should have something for somebody to do till it was cut up;" whereupon the owner, to punish his persistence, furnished a very dull axe and said, "You can go to work at it by the day." All the afternoon he laboured faithfully, and at evening said to his employer, "Have you no better axe than that?" The answer was: "I hire you by the day, and if you use the tools honestly that I furnish, it's not your fault if you accomplish nothing. You said you wanted work and I have furnished it." To this the prompt reply was: "I do want work, but I won't chop unless I can see the chips fly."—This was a wise man's resolution, manifesting a spirit that is sufficient to insure prosperity to its possessor. Such a man will not only make money for his employer, but also for himself; he will use his head as well as his hands, and as he will not work for others with poor tools, he certainly will not for himself. He will make more money than a mere worker for the pay it brings, because he feels that he is in the world for the purpose of adding something to the world's wealth, and he will not plod along contented to do work at such a disadvantage as it was done before the days of horse hoes, horse rakes, horse pitchforks and horse powers generally, but will manage to do his work in the cheapest and best way; he will not buy a heavy running waggon, because he can get it for $25, less than an easy running one will cost, nor sell a first-rate cow for a hundred dollars and pay $75 a piece for two inferior ones. He will keep a record of his doings and know what part of his business pays, and what runs behindhand; he will not be satisfied with the opinion that if a farmer can plough and plant and sow and hoe, and mow, and rake, that is all a farmer needs to know how to do. It is not pleasant to say unpleasant things of one's neighbours and friends and patrons, so we shall not say them, but we cannot repress the conviction that farmers, as a class, are too much inclined to keep on in old ways, with old tools, doing many kinds of work by hand that ought to be done by horse power. We believe they lose vast amounts of money by their neglect to meet in clubs and associations for the purpose of interchanging opinions and experiences. A farmer's life is comparatively a solitary one, favourable to observation and reflection, and as he is constantly face to face with nature, witnessing her ceaseless and wonderful processes, which offer facilities for numberless experiments, there is no good reason for his having nothing of interest to say when he attends a meeting of his professional brethren. Agriculture, the most important human employment, and vastly the oldest, is the one of all others least thoroughly understood, and consequently the one on which there are the greatest diversities of opinion, and the greatest need of knowledge. Even if their pecuniary profits were not concerned, we should suppose farmers would have pride enough to learn to do their work as completely as mechanics do theirs, but when both pride and profit dictate this course, it seems doubly strange that there is not a Farmer's Club in every school district.—*Cor. of Working Farmer.*

A Day's Ploughing.

How much land can a man plough in a day? I have heard men tell of ploughing two acres and a half, but never saw it done. In England, where they plough narrow furrows, say nine inches wide and six inches deep, an acre is considered a fair day's work taking one day with another. Here we plough unwisely as I think, much wider, but do we not lose nearly as much time in resting the horses as would make up for the difference? Narrow furrows, say ten inches wide and seven inches deep, turned over at an angle of 45 deg. is theoretically and practically the best style of ploughing; and if we plough wider, we should go deeper, and unless we use three horses no ordinary team can keep steadily at such hard work without injury. With a team that walks naturally at a good pace, it is better to plough narrower furrows and let them walk at a fair speed, than to tax them too heavily with a wide furrow, which necessitates their resting every other bout. The time lost in this way is far greater than is generally supposed. But I am regarded already too much in the light of an innovator to attempt anything more than a very gradual change. I find it better to let men do pretty much as they have been accustomed to. Still I would really like to know what is about the average rate of ploughing in different parts of the country, and what hours are kept. By looking at my record, I find that we ploughed a thirty acre field corn stubble for barley, with three teams in seven and a half days—say thirty acres in twenty-two and a half days, or just one and one third acres per day for each team. Hours, 6.45 to 11.45, and from 1.30 to 6.30, say ten hours a day. With a furrow slice ten inches wide, it takes about 16 and a half miles to travel to plough an acre and a half. In a field 200 yards long experiments of the Earl of Mar, as given by Sinclair, show that over two hours are lost in turning. Even then, if no time is allowed to breathe the horses, they would have to walk steadily along at the rate of over two miles an hour to plough an acre and a half. I doubt very much whether farmers really plough as much in a day as they think they do. They do not keep an exact account of the time or measure the land accurately.—*J Harris, in American Agriculturist.*

To Fence Against Floods.

Take two short, heavy posts, say three feet long, set into the ground and extend above it some ten or twelve inches. A pole six inches in diamete and of sufficient length to span the stream, or if for a meadow twelve to fourteen feet long, forms the bottom rail of the fence.—This should be cut flat on one side and the ends rounded down to about two inches, so as to fit into corresponding holes in the before-mentioned posts about six inches from the ground. A board or flat rail the length of the panel forms the top rail, and to this and to the flattened side of the pole are to be nailed the uprights at a distance proper to oppose the stock intended to pasture on the land—these to be nailed on the up-stream side.

The panel is now made, and is to be fixed upright by forcing the lower or down-stream side with poles set slantingly for the purpose, and abutting against the top rail of the panel to which this should be nailed.

When during a freshet the water presses against the fence, the props give way, and the panels fall down with the ends or edges of the boards presented to the line of the current and offer but little resistance to it. When the storm or flood is over, all that is necessary is to go to work, and after raising it up, prop it as before and it is as good as ever.

We have seen this fence and were told that it answers all the purposes desired.—*Germantown Telegraph.*

SAVE THE MANURE.—Mr. Z. Breed has an article in the *N. E. Mirror* and *Farmer* on manures, in which he says:—

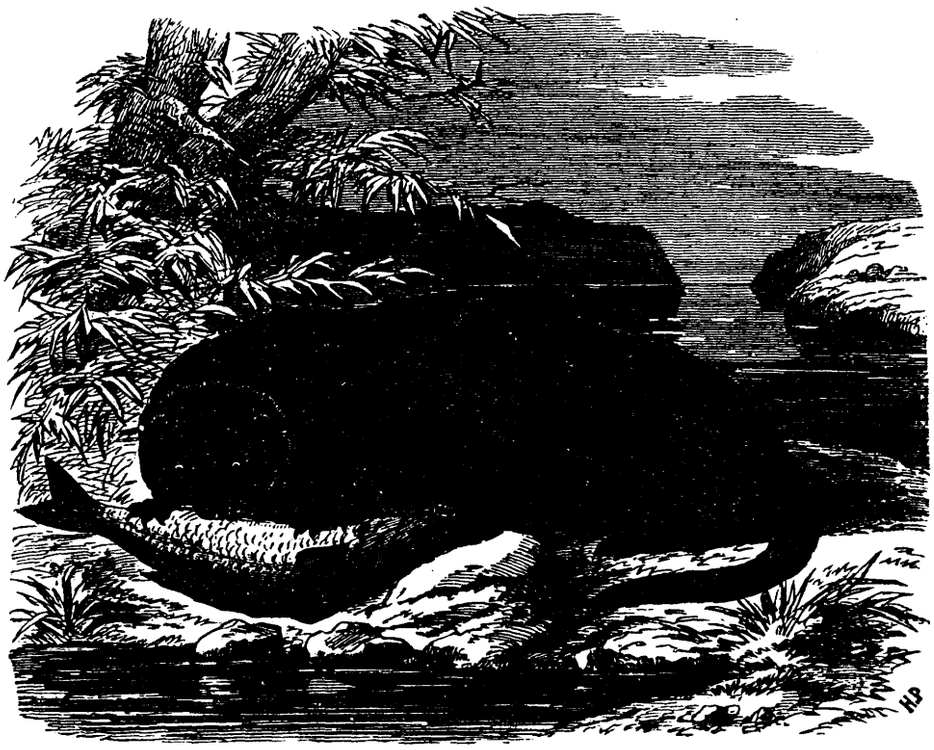
"Twenty hens will furnish enough excrements in a year, if well cared for, to give an acre of corn a good start, equal to a liberal supply of the patent materials. The privy for six in a family if well attended, will produce enough for the hill for two acres of corn. And then, if more is needed, clean up all the fine manure in the yard and in the barn cellar, mix three bushels of ashes to a cartload of thirty bushels, and immediately use it, putting a pint in a hill. It costs no money but needs a little time and attention. I have never found the farmer yet who did not acknowledge that $10 is better used in making manure at home, than in the buying of others' manufacture. I belive this rule may generally be applied. Some exceptions exist. But that it is a bad policy to waste fertilizers at home and buy foreign ones, is a fact too plain to be disputed."

Canadian Natural History.

The Canadian Otter.

(*Lutra Canadensis*, Sad.)

The Otter species are found in all parts of the globe, and are distinguished with difficulty, from the similarity of their colours. As a persevering and destructive enemy to fish, the Otter has attained a notoriously wide-spread reputation. It is possessed of a dainty palate, and invariably selects the choicest specimens of the finny tribes. It is an excellent swimmer and a splendid diver, remaining for a considerable time water without inconvenience. The salmon and speckled trout are its favourite food, and it accordingly frequents the clear rapid streams, in search of these dainties. Not unfrequently, it kills several fish,—devouring only the fine flaky meat which is found on the shoulders.



The Canada or American Otter is peculiar to this continent, and, in size, is much larger than the European species. The fur, which somewhat resembles that of the beaver, both above and below, is shining brown; and the length of the animal from the nose to the root of the tail, is about forty-two inches. In the winter, it frequents rapids and falls, for the advantage of the open water, and if its usual haunts become frozen over it frequntly travels a great distance through the snow in search of some shoal or fall that has resisted the frost. "When seen and pursued by the hunters, as it is on these journeys, it throws itself forward on its belly, and slides through the snow for several yards, leaving a deep furrow behind it. This movement is repeated with so much rapidity, that even a swift runner on snow-shoes, has much trouble in overtaking it. It also doubles on the track with much cunning, and dives under the snow to elude its pursuers."

All the species of the Otter are gregarious and rambling in their habits. They frequently indulge in the somewhat singular amusement of sliding down wet and muddy banks, and ice-slopes. This practice is taken advantage of by the trappers, who place sunken steel traps in places where the animals are accustomed to "slide." Goodman tells us that "they are fond of sliding down hills in winter, upon the snow banks, going on their bellies, feet first, in the manner of a parcel of school-boys "coasting," as it is called in New England. They are said to enter into the sport with great spirit, and to pursue it with intense eagerness and delight.

The body of the Otter is lithe and serpentine. The toes are connected with a broad web, which proves of immense service in propelling the animal through the water. The tail is about eighteen inches in length, and is broad, flat, and strong,—rendering it a most effective rudder. The legs are short, powerful, and loosely jointed, so that the animal can turn them in almost any direction. The latter peculiarity of its formation imparts a strange "waddle" to its movements on land.

The Otter burrows in the banks of streams, lining its nest with leaves and grass. the entrance being under water. The female is said to go with young nine weeks, and to produce from three to five young ones in April or May. When taken young, the Otter may be easily tamed, and trained to fish, for the benefit of its owner. Mr. McDiarmid, in his amusing "Sketches from Nature" gives an account of several domesticated Otters, one of which, belonging to a poor widow, "when led forth, plunged into the Urr or the neighbouring burn, and brought out all the fish it could find. Another, kept at Crosbie House, Wigtonshire, "evinced great fondness for gooseberries, fondled about her keeper's feet like a pup or kitten, and even seemed inclined to salute her cheek when permitted to carry its freedoms so far."

In preceding "Sketches," we have had occasion to describe some striking examples of animals and birds, in which the principle of terrestial destruction is manifested. In the Otter, we find another development of the same idea. Indeed this animal has been appropriately denominated, by the Rev. J. G. Wood, —"the destroyer of the waters,"

In the popular "Natural History" of that author it is spoken of as follows:—"In order that we may rightly appreciate the part that the Otter plays in the great and ever-changing drama of nature, it needs that we should as far as possible place ourselves in the position of the creatures among whom its destructive mission is fulfilled.

"A shoal of fish is swimming quietly through the clear stream, thinking of nothing but themselves, their food, and their physical enjoyment of existence. Suddenly, from some unknown sphere, of which they can form no new conception, comes flashing among them a strange and wondrous being, from whose presence they flee instinctively in terror. Flight is in vain from the dread pursuer, which seizes one of their companions in its deadily grasp, and in spite of the resistance of the struggling prey, bears it away into an unknown realm, whose wonders their dim sight cannot penetrate, and whose atmosphere is too etherial for their imperfect frames to breathe and live. Ever and anon the terrible pursuer is mysteriously among them, like the devouring angel among the Egyptians, and as often as it is seen, snatches away one of their number in its fatal grasp, and vanishes together with its victim into the unseen realms above. To the fish, the Otter must appear as a supernatural being, for it comes from a world which is above their comprehension, and returns thereto at will. a visible and incarnate Death."

The Indian Pied Kingfisher.—When out shooting to-day I wasted a good deal of time watching one of the prettiest sights in bird life, I think, to be seen in the world—the fishing of the Indian pied kingfisher on a still day and on a clear piece of water. To-day the water was as clear as glass, and the little birds were numerous and confiding to a degree. I never saw birds so indifferent to the noise of shooting. They seem to know that no one will molest them. I am sure hundreds of sportsmen in India, the most indifferent to the beauties of nature in the shape of bird economy, must sometimes pause and take notice of this beautiful little fisherman. Just after you have fired a shot, even as the smoke is clearing away, you see him hovering within a few yards of your head—so near, in fact, that you can see his eye as he peers into the glassy water, at a height of from ten or fifteen to twenty or forty feet. He comes dancing along with a jerking flight, then rises gradually up to his pitch, and poises himself, hovering sometimes a minute or more, then comes down with surprising velocity, headforemost and wings closed, completely disappearing under the water, and making a noise you at first hardly believe possible by so small a bird. He then rises laboriously with a small bright silvery fish in his mouth. If he fails he does not stop to rest, but works away till he succeeds.—E., *Indian correspondent of the London Field.*

Oysters.—But whatever may be the cause, the fact is certain, that the press of Paris begins to smell strongly of oysters, and the journalists find some amusing things to say about them. One writer, lamenting the cost of his favourite *hors d'œuvre*, says, in the spirit of *Francois premier*, when decreeing the admission of ladies to the court of France: "A repast without oysters is a discourse without exordium, an opera without an overture, a house without a vestibule. It is perhaps necessary, for those who are not acquainted with French habits, to mention that oysters are always eaten in Paris at the commencement of *dejeuner* or dinner, by the dozen or half-dozen, as an overture or exordium, the benighted Parisians not having yet arrived at the knowledge of oysters and stout after the theatre. The same writer, with a cunning notion perhaps, of shutting up some of the avenues of consumption, tells his readers—especially the fairer portion of them—that they positively eat the oysters alive, and expresses his surprise that the Society for the Prevention of Cruelty to Animals has not already interfered to put down *ostreicide*; for, he asks, if it would be wrong to eat a live animal, can it be a proof of honourable conduct to eat one before it is dead?—*Land and Water.*

Salmon.—Where does the salmon go when he is in the sea? You may catch him in salt water as he is going up to the rivers. But where does he spend the rest of his time during the six months or so he passes in the ocean? Was ever one caught out in the far ocean? What does he take a fly for? A trout fly is an imitation; but a salmon fly is like nothing in heaven or earth. Moreover, as far as I know, salmon do not eat real flies. In fact, it is hard to say what salmon do eat in fresh water. When you catch them their stomachs are always empty. Surely a large Namsen fly, all silver twist and golden pheasant feathers, is like nothing a salmon can ever have seen. —"*Fishing in Norway*," *in the Fortnightly Review.*

Stock Department.

A Shorthorn Bull.

We herewith present our readers with an illustration of one of the most celebrated Shorthorn steers that has appeared in an English prize-ring for some years. This magnificent animal, bred and fed by Mr. Rowland Wood, Thrapston, Northampton, was calved on January 8th, 1862, was by Henry 5th (1994) out of Joan, by Diamond (5918): her dam Julietta 4th by 2nd Duke of Northumberland (3646.)

The following is a summary of this famous steer's doings in the show-yard:—1864.—Sept. 30, first prize at the Huntingdom Show of £3, and extra prize at the same meeting for the best steer in any of the classes of £5. Oct. 5, second prize at the Peterborough Show, open to all England, when 2-years and nine months old. 1865.—July 5th first prize at the Northampton Show, open to all England, £15; Sept. 29, first prize at the Huntingdon Show, as the best steer in the yard, of any breed or age, £5; and at the same meeting a silver cup, as the best steer in any of the Shorthorn classes, bred by the exhibitor, value £21; Dec. 2 at Birmingham for Shorthorns in class 5, open to all England, first prize of £15, and the following extra prizes: Silver medal to the breeder, value £2; a silver cup offered by the Earl of Harrowly, as an extra prize for the best ox or steer of any breed or age, bred and fed by the exhibitor; the Earl of Aylesford's prize for the best Shorthorn, bred and fed by the exhibitor, £15; the gold medal for the best steer or ox of any age or breed, in all the classes, value £20; the hotel and innkeepers' plate, value 25gs. as the best animal in any of the cattle classes; Mr. Ottley's silver medal, as an extra prize for the best animal, value 3gs.; an extra prize awarded by the Society for the best Shorthorn £25; and Mr Beach's cup for the best Shorthorn fed on his cattle food, value 7gs.—total £194.

The *Mark Lane Express* wrote of this fine ox as he appeared at the Birmingham Show, as follows:—"Despite the otherwise general tameness of the exhibition, there was one good class and this was the older lot of Shorthorn oxen in the Hall, the whole of which were commended, and where the honours of the day gradually accumulated; though still, with Mr. Rowland Wood's steer it was Eclipse first and the rest nowhere. A grander beast forward has rarely been seen; with a good kindly head, beautifully covered about the shoulders, with a rare back and great depth, light of bone and full of good meat, this ox is only a little faulty about his hind quarter to keep him from absolute perfection."

To the foregoing particulars we may just add that this superb ox was killed on March 8th of the current year. His weight was 240 stone, with 26 stone and 4 lbs. of loose fat. His girth was 9 feet 9 inches, and his age when slaughtered, 4 years, 2 months, and 1 day.

A New Breed of Cattle.

We find in the current number of the *Journal of the Royal Agricultural Society of England*, i n an article on cross-breeding, some account of experiments that have been going on for several years by John Beasley, Esq., of Chapal Brampton, Northamptonshire. This modern instance of deliberate systematic cross-breeding, based upon a careful consid ration of the principles of physiology, the requirements of the British markets, improve l systems of farm management, and the conse pent changes in the type, constitution, and habits of cattle is of a highly interesting and suggestive character, and may prove of practical benefit, by inducing thought and reflection to many of our readers.

Mr. Beasley, who is an extensive farmer and experienced breeder of shorthorns, determined in 1850 on establishing a distinct breed by engrafting the shorthorn blood upon some of the other pure races; and after mature consideration he adopted the West Highlander as the best suited to his purpose. This beautiful and well defined animal, as found in its native glens of Argyleshire, with his broad chest, springing rib, and capacious trunk, possesses in a high degree the external characteristics indicative of a robust constitution, and a disposition to fatten readily and rapidly. Ten carefully selected cows were accordingly made, all of a red colour, inclining to the lighter or yellow shade, and had the orange tinge of the inside of the ears and skin, so much valued in many pure breeds, as indicating a kindly disposition. These cows were all put to first-class shorthorn bulls, and after producing their second calf, were fattened off or otherwise disposed of. The heifers were put to the best shorthorn bulls that could be procured, either bred by, or descended from, the herds of Lord Spencer, Sir Charles Knightly, or the late Mr. Richard Booth.—"It was an interesting study in itself to watch the effect of the cross with the different bulls, and it was remarked that the Booth blood always left the clearest impression. In some cases it was difficult even for a practiced eye to distinguish the second cross from a pure bred shorthorn; but invariably the last traces of their mountain origin were to be detected in the length and thickness of the horns, width o the forehead, and shortness of nose or distance from the eyes to the muzzle. The original cows, like all mountain breeds in a semi-wild state, were shallow milkers, though the milk was of a very superior quality. As the produce receded from the Scot and merged in the shorthorn, the quality of the milk increased with each cross, *yet retained much of the quality of the original dam.*"

The first cross (shorthorn and West Highland,) was found to be inferior in size to that between the shorthorn and Aberdeen or polled Angus and other large breed , but for disposition to fatten economically, and quality of meat, it could not be surpassed, and rarely equalled. The steers upon ordinary grass through a large portion of the year, and fed in winter, in open yards, on hay and roots, progressed rapidly, attained to great weights in proper time to the amount of quality of food consumed, and produced beef of the very best quality. Eight steers, under three years old, were sold just before Christmas 1859, for £35 each: Estimated average weight 11 cwt.; thereby affording a handsome profit to the breeder and feeder. The second cross proved equally, if not more encouraging. A detailed amount of the food and treatment of one steer is given, a scale much below that of ordinary fattening cattle, but the animal when only a little over two years old weighed when dressed nearly 10 cwt., and it is said that several others reached a similar standard. In speaking of cross-breeding it must be carefully borne in mind that in the cases we have been considering, Mr. Beasley always uses *pure* shorthorn bulls.

A promising young animal, with three crosses of shorthorn blood, was saved as a bull, and at ten months old sold for £30, to a farmer having a small herd of pure shorthorns. The cross from this animal is represented as being so far successful, the calves looking prospering, well shaped with abundance of flesh, and plenty of hair. This, with some of the younger bulls as to quality, colour, and general appearance so closely resemble the pure shorthorn that a critical eye could only detect the difference.

Mr. Beasley's cows have all been regular breeders, and the total number of calves raised from this family considerably exceeds a hundred, although the *pleuro-pneumonia*, four years ago, in spite of every effort, carried off a number of the best animals. Notwithstanding this the stock is regarded to be hardy above the average, and remarkably free from disease. It is remarkable that, without a single exception, the stock has no black on any part of the body; even the muzzle is invariably of a light or flesh colour, so generally regarded as a distinguishing mark of a thrifty animal. The first and second crosses were principally red-roans, with a few blood reds, but of the first cross, some were white with red ears. The bulls that have been sold for use have been either red, red and white, or dark roan. The first and second cross retain much of the wild and restless habits of the Highlander; and it is not until they become more closely related to the shorthorn that they acquire his docile habits. In

several of the leading Provincial Exhibitions, cows and heifers have taken prizes when competing with pure bred stock, which has also been the case with fat oxen. A steer of this herd, having two crosses of shorthorn, took first honours at the fat cattle shows of London and Birmingham, the same year.

"The beef of cross bred cattle is now generally admitted in the English markets to possess superior quality,—as having a greater quantity of lean than that of most of the pure breeds, and also from the fat being well mixed with the flesh or muscular parts, and consequently presenting more roasting meat and less offal than most other animals. Again, as regards profit, reckoning from birth to maturity, we may safely assert that they may be equalled, but cannot be surpassed by any of our pure breeds for producing an equal weight of meat at a given age. * * * *

"To those about to commence breeding crosses, whatever be the race to which the cows may belong, our observation and experience induce us to recommend *shorthorn sires*, as their purity can be better depended upon than that of other bulls; and we are fully convinced that even for the purpose of cross breeding, the purer the blood on the paternal side the more clearly will excellence be stamped on the progeny. * * * *

"What constitutes a pure bred animal is a point not very clearly defined. Mr. Strafford, the editor of '*Contis's Herd Book*,' a high authority on such matters, considers that animals which cannot show a descent for four generations from pure bulls are ineligible for entry in the Herd book; and it is generally considered that such a pedigree will sufficeto produce an animal possessing all the characteristics of his male progenitors. The herd of crosses we have attempted to describe consists at the present time of forty females, several of which have reached the fourth cross, and some of them have been entered in the Herd book: those which have attained this stage possesses the general character of the improved shorthorn; they are straight in the back, well ribbed, short in the leg, with abundance of hair, and of very superior quality. In short, in appearance, they could not be distinguished from the breed, and promise, if their management be carried out with the same liberality and intelligence which have hitherto been displayed, to become at no distant date a most important and valuable breed of cattle."

Plan for Hog Pen.

Some one asks for a plan for a "hog pen," and although Frank Wicks (in his excellent article on "pork raising") answers the question in regard to sleeping pens. I propose to give my plan for a house to raise pigs in, I wished a place large enough to raise twelve litters of pigs at one time; at least to have twelve separate pens. I wished to have an entry between the pens so that I could feed both sides. I therefore built my pen forty feet long and twenty feet wide, constructing it in the following manner, (which of course could be varied according to the amount of money to be expended.) I took a plough and scraper and raised the ground in the middle so as to slope off from the middle or entry part where the proposed building was to be unit ten feet outside the pen. I then set a row of posts ten feet high, and two feet from the middle, the whole length of the pen and the same number two feet from the middle on the other side and eight feet apart lengthwise of the building. This left the entry way four feet wide. I then set the two outside rows of posts eight feet apart and five feet high. I then spiked scantling on the top of each row of posts, then taking common, sound twelve foot boards, (the broader the better,) I nailed them on this scantling leaving the lower or outside end, to extend three inches outside the outside posts, the upper or inside end extended over two feet above the high middle posts the ends almost touching, then by taking and nailing a board on the top of the ends of these boards lengthwise of the pen, one on each side, they formed the comb of the roof, then by taking half inch siding ripping it and using this for batting the cracks, you have a pretty good roof--or if you have plenty of money you can leave off the batting and cover with shingles: I used the former. I then boarded up each side the entryway three feet high making a trough and apron between each post; the partitions between each pen need not be over three feet high. I then boarded up the outside posts leaving a trap door for each pen. I then put up a board fence eight feet outside the pen and put in moveable partitions across from the pen to this fence, thus making a yard eight feet square for each pen of the same size. I then boarded up the ends making a door at each end of the entry and a window over the door.

By having a trap door in the fence opening into the corner of the hay lot I can put in my sows before they pig without trouble and by removing this movable partition between the yards can turn out or in any one I wish.—J. D. P. in *Prairie Farmer*.

Vices of Horses.

IDLE horses, or those not working very hard, are apt to acquire habits that are very annoying, as crib-biting, weaving, pawing, dislike to go through a doorway, kicking the sides of the stall, &c. The first is considered by many unsoundness as well as a disagreeable habit, and they would reject a horse, no matter how good, or ever so well suited to the business they wanted him to perform, if he possessed this trick. I do not look it at in this light, and apart from the annoyance of listening to the sound usually made by those addicted, to the habit I am not aware that it injures the animal. The idea that they "suck wind" enough to make them any more liable to colic or rupture of the intestines, is certainly false in all that have come under my observation. One of the finest "Gentlemen's Horse" I ever knew was a confirmed crib biter. He was a large, brown gelding, nearly sixteen hands high, stylish and showy, had trotted in 2.28, could pull a waggon almost that fast, gentle and reliable in every place. If there was anything he could lay his teeth on he was sure to crib, yet always kept easy; would stand an immense amount of work and trot long distances, never, to my knowledge, sick a day in his life. The last I knew of him, he was owned by a gentleman in Cincinnati, who valued him very highly for his many good qualities. When horses have once acquired this habit, I doubt if they ever forget it. By having a box or stall sealed up perfectly smooth they cannot get hold of anything, and few horses will crib if thus kept, though some press their teeth against the smooth side and accomplish it. There is a muzzle made through which horses can pick up their feed without being able either to bite or get hold of anything with their teeth. It is made with two small iron bars, joined to the nose band of the halter, far enough apart to allow motion of the lips, efficient to pick up their food.

Weaving is another very perplexing habit, acquired from, I know not what, and once learned I could never cure. Fretful, high tempered horses are most prone to acquire it, and when at full work generally quit of their own accord. Some horses cannot be easy till they have pawed their bedding quite out of the way, leaving them a bare floor to lie on, soiling their clothes and hair in a manner not very agreeable to the groom, his duties thereby being much increased. Turning loose in a box will sometimes cure this evil, or by a clog fastened above the knee. When this is done there should be a pad applied to the shin, to keep the clog from injuring the very sensitive membrane covering the tendons. From having been led carelessly through a doorway, where they have been injured, horses are afterwards fearful of attempting the passage, and when urged to do so will go through with a bound that adds greatly to the danger. Compel the groom to get the horse square with the door before leading him out, holding him firmly by the halter, so that the leap cannot be made, never urging him to go faster than the slowest pace; in no case permitting a blow to be given. Rather than use force, either blindfold or back him out, until the fear is overcome by judicious usage.

Kicking the sides of the stall is a very unfortunate custom some horses possess, and no amount of punishment will cure one that has become determined in the practice. Clogs and whips are of no avail, and there seems to be almost a species of insanity compelling them to kick away till their legs are bruised and swollen from the blows. I had one very fine horse that I tried every method of cure I could hear of without effect. When he was shackled, of course he could not kick, neither could he lie down, and I have kept him standing for a week, when in less than an hour after the straps were removed he would fall to kicking as furiously as if the lost time had to be made up. I cured him by putting him in a stall about the width usually made in livery stables, the sides of the same length of the horse when standing with his head at the manger. A bar was dropped behind his quarters to keep him from backing. Through the sides of the stall a slot was cut large enough to admit a plank two inches thick and eighteen inches wide. This plank came within half an inch of his loin, and of course he could not raise himself to kick. It was amusing to watch the rage he would get in in finding his most violent efforts frustrated. I looked for him to strike with one foot, and intended, if he had done so, to let a shelf extend on each side as high as his gaskins, which would have prevented that. The plank over the loin, however, cured him, and after going from my stable into a stall that had not these appliances, I never heard of his relapsing into his former bad practice.—*Colman's Rural World*.

Horse Cleaning by Machinery.

We cull from the *Manchester Guardian*, the following particulars of this useful contrivance:—"At the establishment of the Manchester Carriage Company, Pendleton, perhaps better known as Mr. Greenwood's, there is now in practical operation a novel and an ingenious system of cleaning horses by means of a steam brushing machine, invented by Mr. Haworth. The idea has evidently been derived from the revolving brush which many hairdressers have now in use, but the application of the idea to horse cleaning is of such utility, and has had so great an effect in economising labour, that it is worth a public notice, especially as we believe the machinery is not in use in any other stable. In the lower stable-yard at Pendleton there is a large shed, where ten or a dozen horses can be cleaned at one time. Along the centre of the roof is a revolving shaft, from which hang several endless straps. Each strap gives motion to a horizontal pole, at one end of which is a conical brush that rotates rapidly. On an omnibus horse being brought into the stable, after his three hours' work (during which, in any kind of weather, he removes from the roads of Manchester and Salford an almost incredible quantity of dirt), he is taken to this shed and a man applies to him the machine brush. In about half an hour the animal is thoroughly cleaned, and only the head requires finishing by hand. The cleaning effected by the machine is much more searching and effectual than the most diligent hand currying can possibly be, and to the majority of animals the greater cleanliness of their skins, as well as the improved circulation of the blood which is produced by the machine brush, appear to be acceptable Most horses undergo the operation quietly and patiently, but in some animals timidity is produced by the rattle of the machinery. In so large an establishment as Mr. Greenwood's the most important result of the adoption of this invention is the economy of labour which results from it. Under the old system, a man was thought to have done a fair day's work if he cleaned ten or a dozen horses, but by the machine he can clean thirty in the same time, and with considerable less bodily labour. When it is remembered that from Pendleton several hundred horses are daily sent out to work, it will be seen how important a saving in money is effected by the employment of this new process. Another invention by Mr. Haworth is applied to the drainage of the stables. Instead of the ordinary sloping stone pavement, a flat floor of planks is constructed. A small space is left between each plank, and beneath these spaces are troughs which convey all moisture to a main covered channel. We are informed that this system of drainage has a very material effect in lessening the consumption of straw for litters."

Folding Sheep upon Vetches.

When vetches are grown upon poor soils, the most profitable way of using them is by folding sheep upon them. When sheep are turned in upon a piece of tares a large portion of the food is trodden down and wasted. Cutting the vetches and putting them into racks does not much mend the matter, as much is still pulled and wasted, and the manure unequally distributed over the land. To avoid these evils, hurdles with vertical spars, betwixt which the sheep can reach head and neck, are now used. These are set close up to the growing crop along a considerable stretch, and shifted forward as the sheep eat up what is within reach. This requires the constant attention of the shepherd, but the labour is repaid by the saving of the food, which being always fresh and clean, does the sheep more good. A modification of this plan is to use the same kind of hurdles, but, instead of shifting them as just described, to mow a swathe parallel to them, and fork this forward within reach of the sheep as required, repeating this as often during the day as is found necessary, and at night, moving them up to the growing crop, so that the sheep may lie for the next 24 hours on the space which has yielded food for the past day. During the night, they have such pickings as have been left on the recently-mown space, and so much of the growing crop as they can get at through the spars. There is less labour by this mode than the other, and in practice it has been found to do well.

As spring-sown vetches are in perfection at the season when the pastures usually get dry and scanty, a common practice is to cart them on to grass land, and spread them out in wisps, to be eaten by the sheep or cattle. It is, however, much better to have them eaten by sheep where they grow, or to cart them to the home stead.—*Ec.*

The Dairy.

Observations in Gestation of Cows.

According to Earl Spencer's table, published in an early number of the *Royal Agricultural Society's Journal* and in "Doyle's Cyclopædia of Husbandry," the time of gestation in the cow varies in length from 220 to 313 days. Calves born at the earlier period of course come into the world prematurely. The natural term of gestation, according to different calculations, is from 280 to 285 days. In some parts of the north of England a cow is considered "due" at the end of 40 weeks, or 280 days; but some published tables allow from three to five days beyond that time. We should consider a trifle over the forty weeks—say two or three days beyond—a fair average to accept. The statement of Lord Spencer shews, from the 260th to the 279th day inclusive, 130 cases. Of the offspring in these instances, 68 were single heifers, 53 single bulls, 6 pairs of heifers, 4 couples of bulls, and there were 8 births of twin bull and heifer calves. Thirty-five cows calved on the 280th day; and of these, 15 brought cow calves and 20 had bulls. On the 281st day, 39 cows brought forth 20 single heifers and 18 single bull calves, and 1 pair—bull and heifer. Day 282—47 cows brought 26 heifers at single births, 1 pair of heifers, and 20 bulls. Day 283—51 births; 30 heifers, 21 bulls. Day 284—66 births; sexes equal, no twins. Day 285—74 births; 29 heifers, 43 bulls, 2 pairs of bull and heifer calves. Day 286—60 births; 22 heifers, 38 bulls. Beyond this time the number of births decline, the bulls maintaining the majority throughout down to the 297th day, on which only two cows produced offspring—one a bull the other a heifer. The 298th day has no record of a birth against it; but on the 299th day we find one bull calf. After that time, down to and including the 313th day, 7 cases appear, and in each one the calf was a female. This, as far as it goes, corroborates the evidence resulting from our own observation, that if a cow carries her calf more than a fortnight beyond the ordinary time of gestation her owner may almost with certainty calculate upon having a heifer from her. No instance of a cow retaining her calf beyond 300 days has ever come under our own notice; and invariably when the birth has taken place after the 294th day the calf has proved to be a heifer, although between the 280th and the 294th day the bulls have considerably outnumbered the females.

To Butter Makers.—As this is the season of the year when those engaged in the dairy buisiness are much troubled by a small fly (well known to housekeepers) getting in their milk and cream, I offer the following simple and efficacious remedy for the removal of the annoyance. Take the leaves of the elder bush, (very common in most localities,) and hang them in several places about your milk room or vault, renewing them as they become old and wilted. You will find yourself rid of a disagreeable vexation, at but a small expense of time and trouble. Try it. —*Prairie Farmer.*

Poultry Yard.

Preventing Fowls Scratching.

We have received the following inquiry:—

"Can you tell me of any plan to prevent Bantams scratching in flower-beds? I have tried sewing up their feet in canvass, but do not find it effectual."

We think that the handwriting is that of a lady, and she adopts the motto, "Firm." If she be "firm of purpose," then she may carry out the suggestion offered in this letter from another correspondent, "W. Parker:"—

"I lately received a letter from a son of mine who is at Port Natal, in which he says—'Up the country where I have been, they have the most clever way of preventing the fowls from scratching the ground that ever I heard of. They cut the fowls' toes off when they are first hatched, and I can assure you that it is a perfect remedy, for it is impossible for them to scratch afterwards."

So we should have concluded without any such assurance!

The frost often does in this country that which the natives do at Port Natal—it takes off the nails of the fowls, and in places where they have the run of the kitchen in cold weather, they get into the wood ashes and burn their nails off. This, we expect, is the African operation. The *nail* only is removed. This would matter little in a light soil, as the toes will turn over leaves, or loose earth; but if the *toes* were removed they would be poultry "Wildringtons," and "hobble on their stumps," even if they were not altogether incapable of locomotion.

To "Firm" we can state no plan for preventing Bantams scratching; but our plea for them is, they are searching for our garden enemies when they scratch. They are hunting for creatures that do far more mischief than they do. On their behalf we plead guilty to untidyness.

A gentleman was complaining to us once of the damage done by Pheasants to the farm crops. We had a hen Pheasant at hand, and opened the crop to examine its contents. It contained seventy-one grubs. These would have destroyed twice as much food as the Pheasant would have eaten, and would have given birth to other insects which would have multiplied geometrically.—*Cottage Gardener.*

Large Poultry House.—Mr. Snively of Greencastle, Pa., has spring put up a very extensive poultry house for growing the fancy breeds. He says:—"It is built in the shape of an elbow—one wing 102 feet long and the other 74 feet, with a room in the centre to keep a stock of feed on hand. Every room has a feeder and a large yard attached, with constant running water through the yards, and with large windows to the laying and roosting departments in front and rear. The building and yards will be sufficiently large to accomadate 1500 fowls, but this would be too large a stock for any man to keep at one time. In front of my poultry yards I have a fish pond 120 feet long, 60 feet wide and 8 feet deep, with a good stream constantly passing through, and containing fish."—*Country Gentleman.*

The Apiary.

A Bee Anecdote.

To the Editor of The Canada Farmer:

Sir,—On Friday last I hived an unusually large swarm. On Saturday afternoon I was in the house, when some one called to me that a little boy had upset one of the hives. Going out, I found the child—an urchin of five years—lying on the ground with his head almost into the capsized hive, and busy poking out the bees with a piece of a shingle he had in his hand. They were flying thick around him, and having some dread of approaching, lest I should be stung myself by the enraged insects, I shouted to him to come away. But he was so intent on the amusement that he paid no heed to me. I then caught him by the arm, swung him out of the way, and righted the hive. The child did not get a single sting. It seemed marvellous to me that he was not stung to death. During Sunday the bees kept going in and out of their hive. But, on Monday morning, seeing none of them about, I looked into the hive, and found that the whole swarm had taken its departure for parts unknown. Before leaving, they had made a few inches of comb. I presume that during Sunday they had scouts out, looking out for a *habitat* where they would be more free from disturbance.

I think in all my reading I never met with a case in which bees allowed themselves to be treated so roughly, without taking summary vengeance on the offender.

Yours, &c.,

J. K. EDWARDS.

Manningville, C. E., July 6, 1866.

Entomology.

Black Flies.

A copy of the following spirited lines on these little tormentors, has been sent us by the author, who evidently wrote when smarting under the irritation produced by their repeated attacks. Many of our readers,—those especially who live in the back country,—will no doubt feelingly appreciate them. For the information of those who have not been so unfortunate as to make their personal acquaintance we would merely state that these tiny pests are two-winged flies, with black bodies about the one-tenth of an inch in length, and legs ringed with black and white. Their merciless attacks have long been celebrated in the records of early travellers in this country. Lambert, in his *Travels through Canada*, upwards of fifty years ago, says, "they are so very small as to be hardly preceptible in their attacks, and your forehead will be streaming with blood before you are sensible of being among them." Another writer, Captain Back, (quoted by Kerby and Spence) speaking of the misery occasioned by these little tormentors, observes, "There is certainly no form of wretchedness among those to which the chequered life of a *Voyageur* is exposed, at once so great and so humiliating, as the torture inflicted by these puny blood-suckers. To avoid them is impossible. At last, subdued by pain and fatigue, he throws himself in despair with his face to the earth, and half suffocated in his blanket, groans away a few hours in sleepless rest." Mr. Gosse, in his charming work, *The Canadian Naturalist*, in giving an account of these and other kindred flies states that "we know little, after all, of this evil, compared with those bold and hardy men who first penetrated this vast wilderness, and set up their solitary dwellings in the midst of the forest, before roads were cut, or clearings made, or marshes drained; when clouds of venemous insects rose out of the rank swamps, to which those we encounter are as nothing. I have heard some of the first settlers declare that they did not dare to go out to work without a pine torch continually blazing on their hats, to keep, by its smoke and flame, a small space around their heads clear of minute but formidable foes!"

There is another specie of fly—the sand-fly (*Simulium nocivum*)—which often makes its appearance in vast swarms after the departure of the Black-flies. It is so excessive small as hardly to be perceptible, except by its attacks which are very painful, producing an irritation and smarting compared to that caused by a spark of fire. These, combined with mosquitoes, often render our pleasant summer months anything but agreeable to the settlers in the backwoods; it is consoling, however, to find that, like the wild beasts, they disappear to a great extent before the inroads of civilization.

The following are the lines we referred to:—

BLACK FLIES.

"*Puer abige muscas.*" Cicero.

The black-fly, *Simulium Molestum*, makes its unwelcome appearance at a very early hour on a May or June morning, is quiescent during the noontide heat, and resumes its persecution of mankind, with unabated ardour, during the evening.

MORNING.

The vermeil streaks of early day
Are stretched athwart the skies;
The wild bird's charming melody,
The flower's perfume, the hum of bee,
Enchant the ear, delight the eye;
But Oh!—*confound* those flies!
(*The Author scratches himself.*)

NOON.

Sol's rays, intensified in power,
Up toward the Zenith rise;
Hushed is the song of bird's, the flower
Lies drooping in its leafy bower,
The bee's wing rests,—Oh! melting hour!
But yet,—hurrah!—no flies!
(*He enjoys a siesta.*)

EVENING.

'Tis eventide! the river's flow
Gladdens our ears and eyes;
The westering sun is sinking low,
The cool wind sighs, the fire-flies glow,
All Nature feels refreshed—but oh!
Again—*again* those flies!
He breaks out into a
snatch of maniacal song:
I see them dancing in the air:
I see them dancing, dancing, dancing—
Screen, oh! screen me: veil, oh! veil me;
Those flies will drive me mad!

He requests his man to make a "smudge," and sits poring over it with smarting eyes, till night fall, when he retires to bed, happy in the reflection that "time," even fly-time, "*flies*;" his last word, his last thought, thus being *flies*.

In the morning he awakes with the entreaty—"Oh fly! *not yet!*"

Lakefield, June 16, 1866. B. A.

☞ The microscope reveals the fact that a little black speck of potato rot the size of a pin head contains about two hundred ferocious animals of the beetle form and shape, biting and clawing each other most savagely.

A Child's Letter about Poultry.

DEAR MR. EDITOR,—It has long been my intention to write to your interesting and instructive paper—THE CANADA FARMER, I now sit down to avail myself of the privilege in the following letter. I feed my little chicks and ducks on meal and water. I take a large bowl, fill it with meal, and then slake it with water, and mix it with my hands. I feed them about four times every day, giving a saucerful to each nest. I have a good deal of trouble keeping the other hens away from the nest to eat the food. It is not, I assure you, dear Mr. Editor, that they do not get lots to eat, for they get well fed every day. About the age of three weeks, I let my little ducks out of the box or pen in which I put them after hatching, and let them roam about in freedom. My little chickens I do not keep shut up at all, even for a day after they are hatched, but of their own free will they remain, generally speaking, in the hen house for about the space of two days after, till they gather a little strength, and then they go out and make themselves at home in the yard and drying green. We have great advantages in the way of raising poultry, our hens having a good run in two meadows, a small orchard, a drying green, yard, and a fine wood. The wood, however, is rather objectionable, as it is rather frequented with foxes, who have more than once made inroads on my hen house, to my great grief and indignation. I hope my little chickens and ducks will go on and succeed as well as they have began. Pray, Mr. Editor, how much do you charge for giving information, and let me know by return of post. Believe me to remain,

Yours truly,

"The Hermitage, MISS A. LEITH.
Ancaster, C. W.

NOTE BY EDITOR C. FARMER—Though the above letter was not meant for publication, we cannot resist the temptation to put it in print. We are much pleased to receive such a communication, and to find that young people are reading THE CANADA FARMER, and becoming interested in rural pursuits. One page of the sheet of note paper on which the above letter is written, contains a sort of "Family Register" of our little friend's ducks and chickens. The pen has been lightly drawn across it as if she repented of giving so full particulars, but we are sure it will interest our readers as it has done ourselves. It is as follows:—

"DUCKS AND CHICKENS PERTAINING TO MISS A. LEITH."

CHICKENS.

10 in one brood; 2 in one brood; 2 in one brood; 1 in one brood.

DUCKS.

11 in one brood; 9 in one brood.

Total—35.

DEAD.

2 ducks; 2 chickens.

"All doing well, and well taken care of."

We would inform our young friend that we do not charge anything for giving information, and if she will send us any questions she would like to ask, we will answer them in THE CANADA FARMER, and then they will benefit others as well as herself.

NEW CANADIAN HYBRID GRAPE—"H" makes the following enquiries:—"A short time ago you mentioned a grape vine of great promise, and which was likely to be *the* vine for Canada, belonging, I think, to Mr Arnold of Paris, C. W. I should like to read something more respecting it. What are its special good qualities? Is it early? Are there plants of it for sale at the right season? And at what price? And how should Mr. Arnold be addressed? Why does he not advertise?"

ANS—By referring to our issue of Nov. 1, 1865, our correspondent will find his questions fully answered so far as the qualities of Mr Arnold's grape are concerned. It is early, though further experiment is required to authorize a statement as to the average date of its ripening. There are no plants for sale, nor will there be any, until the grape is more fully tested, and a sufficient stock of young plants raised to make it worth while to bring it into the market. In due time it will be advertised.

TWO QUERIES.—"A subscriber" enquires as follows:—1. "Can you or any of your numerous readers instruct me how to mend India-rubber."

2. Is there any such thing as a cheap pocket microscope, which could be used for examining pork &c.

ANS.—1. We are unable to give the required information, but some of our readers probably can.

2. A very handy and powerful microscope, composed of three lenses, is manufactured by Mr. C. Potter Optician, &c., of this city, price $2.00.

POTATO-DIGGING MACHINE.—"E. Hawell" of London, C. W., writes:—"Could you inform me, through your paper, if there is such a thing made in Canada as a machine for taking out potatoes, and if so, where they are to be got and about what price one would be. If you can answer this in your next issue I should feel much obliged."

ANS.—There are two or three potato-digging machines made in the United States, but so far as we know, the implement is not manufactured in Canada.

HOW TO DESTROY ANTS.—"A Correspondent" enquires as to "the best method of exterminating these tiny pests of the lawn and the garden.

ANS.—We have published in past numbers of the CANADA FARMER several suggestions for the destruction of these annoying little wretches. We subjoin two more "cures," which we extract from a recent issue of the *Gardener's Chronicle*. Says the first:—"Take 1 lb. of black soap, dissolve it in four gallons of water, and scatter the solution through a fine rose over the runs and nests. Death will ensue. The remedy should be repeated until all are destroyed, taking care, however, not to water the roots of plants or to destroy grass on lawns. Stir the top of the nest on a hot day, sprinkle with the solution, and the result will be satisfactory."

The second is supplied by "A Would-be Gardener." It is as follows:—"I have been greatly troubled with ants in both stove and green house, and have tried several ways of getting rid of them; the most effectual of which has been to get a bottle trap baited with a moderate quantity of sugar in the bottom, and to put it in their runs at night. In the morning the trap will be found to be nearly full. Have a bucket of hot water close at hand, and immerse the trap in it. I have killed thousands in this simple manner. I have tried guano-water, and also sprinkling dry guano in their paths, but without the least effect."

The Canada Farmer.

TORONTO, UPPER CANADA, JULY 16, 1866.

Among the Apiaries.

We have recently visited a number of apiaries of various sizes, and have a few things to note for the benefit of our readers in reference to what we saw and heard when among them. In the first place we were surprised to find in how backward a state the art of bee-keeping is among Canadian farmers. Very few comparatively, keep bees, whereas there should be an apiary on every farm. Those who do keep them, with very rare exceptions, follow the old style methods, and know little or nothing of modern improvements and discoveries in apiculture. Our limited experience in reference to the matter made us diffident and modest at first, but we soon found that our study of Langstroth, Quinby and other bee publications, together with a year's observation of bees in a moveable comb hive, had put us in practical acquaintance with the subject far ahead of men who could boast of twenty or thirty years experience in the old fashioned way. Several bee-keepers with whom we met, had never heard of moveable comb hives, did not know the utility of smoke in taming and handling bees, and could give very little account of the habits of these little insects. The fact is that with the common box or straw hives, and old-time methods of management, the bee-world is a realm of mystery. "Shadows, clouds, and darkness rest upon it." Bee keeping is a venture instead of a science,—a lottery instead of a business. Several things were told us by old fashioned bee-keepers which they could not explain, but which we had no difficulty in accounting for. "I lost a stock in that hive last winter though there was a plenty of honey" Explanation, for want of ventilation the congealed moisture stopped the passages, and the bees could not get to their stores. "A fine late swarm perished in that hive." Explanation, they were robbed by the other bees, and had too little honey to live through. Strangest of all, we were told of stocks that got through the winter well, had plenty of honey when set out in the spring; but they ate up all their honey and did not make enough to live on! The inference was that a lazy fit had taken the bees,—they wouldn't work,—and so had nothing to eat and died. Human beings will sometimes take fits of laziness and starve for want of the bread they might have by working for it, but bees never do this. Had these bee-keepers used moveable-comb hives and watched their bees, they would have known what the matter was. They would have ascertained that there was this year a strange failure of the honey harvest between apple-blossoms and white clover,—just at a time when the quantity of young brood to be provided for, immense quantities of honey were needed for home consumption. Had they discovered this, and fed their bees for a few days, they would have saved them. We might give other illustrations of the want of practical acquaintance with this subject which came in our way, suffice it to say that our little tour among the bee-hives has thoroughly convinced us that people who will stick to the old haphazard way of keeping bees, and will not read and inform themselves on the subject had better let the thing alone, for they cannot rationally expect success. In our climate, there are certain precautions that are absolutely essential. It is different here from those warmer countries of Europe, where bees may be very much left to themselves, and where they thrive even if neglected. It is not laborious work that they need here in looking after them; there is nothing required that is so arduous as to discourage anyone, but there must be some knowledge of the nature and habits of the bee, and a little attention to those wants which man is to supply as a small return for the generous hoard of sweetness the bee makes for him. We are free to confess that we met with no instances of signal success in bee-keeping among those who adhere to box and straw hives, and are not posted in modern ideas and improvements. But we did meet with several instances of downright failure, and with some cases of fluctuating "luck,"—good and bad, which ought to be exchanged for steady intelligent success. As a case coming under the last remark, we met with a farmer who last fall had seven hives of bees, only two of which had wintered over. But these two had "done splendid this spring." They had multiplied to seven, one hive having swarmed twice and the other three times. Now, in all probability, they were allowed to increase in some such way last year, and weak swarms with an insufficient store of honey were permitted to brave our long winter and to perish with hunger. If some of the weak stocks had been doubled or trebled, and a little attention paid to feeding them toward spring, there might have been say four strong stocks to begin business with the present season. The locality is evidently favourable for bees, or the two stocks would not have multiplied as they have done this unpropitious season, and with four strong stocks there might easily have been an increase to ten of sufficient size and vigour to collect honey enough and to spare. Such increase is all that could be desired by any reasonable bee keeper. We urge it upon our readers that they take pains to inform themselves on this and on all other practical matters pertaining to rural economy. Why should we shoot in the dark, when we may have the blaze of full day light?

In the course of our apiarian travels, which were not, however, so extensive as we could have wished we met with some pleasing exceptions to the fore,

going remarks. Mrs. Mathieson, wife of a Toronto merchant, has a well-kept apiary at their beautiful rural home, about a mile north of Yorkville. This lady manages her bees with her own hands, and is an enthusiastic and successful apiarian. She has about a dozen stocks, most of which are housed in the hive manufactured by Mr. P. A. Scott, of Yorkville, an illustration of which appeared in Vol. I of THE CANADA FARMER. It is a moveable-comb hive, constructed somewhat on the Langstroth principle. At the date of our visit, (July 4,) none of Mrs. Mathieson's hives had swarmed, though several were showing signs of doing so. We visited on the same day, Mr. James Lesslie's apiary, about a mile north-west of the village of Eglinton, and found it to consist of 24 stocks, all in the most thorough order, and presenting as a whole, a singularly animated and beautiful appearance. Mr. Lesslie uses two descriptions of hive, the Scott hive referred to above, and the Michigan hive. The latter is a moveable-comb hive, of about the same dimensions as the Thomas hive, but not nearly so convenient, there being no moveable-bottom board in it, and the frames resting on the bottom of the hive, instead of being suspended from the top of the sides. It is not so convenient for taking apart and examining as the Thomas hive, still it secures most of the advantages of the moveable-comb principle, and is a vast improvement on the common box hive. Mr. Lesslie thoroughly understands bees, and is a most careful, enthusiastic apiarian. His success has been encouraging, and shows what a beginner may do who begins intelligently, and takes care to inform himself about bee matters. It is four years only since he began with a single hive. At first, from inexperience, he had some misfortunes, but from that small and recent beginning, he has gone on increasing his stock until he has now, as we have said, 24 hives, only two of which are this year's swarms. He has therefore, or rather had at the time of our visit, the increase of the present season from 22 hives yet to be added to his apiary. From the care and skill with which he manages bees, Mr. Lesslie's honey is already famous in the Toronto maaket, and commands the highest price for table purposes. He collects his surplus honey in small boxes, containing from 5 to 7 pounds, finding this a convenient size for consumers. We advise all interested in api-culture, to pay a visit to what we shall venture to call the "Eglinton Apiary"

(To be continued.)

Trees, as they affect Climate and Vegetation.

THE influence that the indiscriminate and merciless slaughter of our forests has upon the climate and vegetation of this Province, was never more apparent than during the present season. In the older settled sections, where, in many cases, the landscape has been almost stripped of its trees, the fall wheat was found in spring to have been severely winter-killed, Since then it has gathered up somewhat, but, at best, it presents a patchy and unsatisfactory appearance. In the more recently settled districts, where the process of forest extermination has only lately been inaugurated, we learn that the crop never looked better. It is perfectly clear that this marked contrast is not to be attributed to bad farming in the one case, or to rich virgin soil in the other. The reckless denudition of our country of its trees has produced a decidedly injurious influence on its climate, and its natural irrigation. By a well-known natural law, trees ameliorate the extreme cold of winter; while in summer, they modify the intense heat, and impart that humidity to the atmosphere which is so favourable to plant growth. The effect of even a few trees on the temperature of a locality, would astonish any ono who had not previously observed it.

The Cape Verd islands furnish a remarkable instance of the close connection between the climate of a country and its forests. In late years, famines have been frequent there, from want of rain, in what used to be the rainy season. No rain fell in these islands from 1830 to 1833, and 30,000 people perished in consequence. And at the present time, we learn that the inhabitants are in distress from the same cause. Scientific men agree in attributing the phenomenon to the fact that the islands have been almost completely stripped of their trees. The fact is as undoubted that forests cause a precipitation of rain from currents of air, charged with moisture, as that water is forced out of a wet sponge by the pressure of the hand. Remove the trees and the humid air-current will pass on, leaving the soil parched and dry. These facts are well understood, and should be more generally recognised by our agricultural population.

We observe that our cousins across the lines are bestirring themselves in this matter. A resolution has recently been introduced by Mr. Donnelly, of Minnesota, to the House of Representatives, directing the Commissioner of Public Lands to inquire "whether a system cannot be devised to encourage the planting of trees in regions destitute of timber." And as a step in the right direction, we are glad to notice that a bill has been submitted, by Mr. Wallbridge, to our Provincial Parliament "to encourage the planting of trees upon the Public Highways in this Province, and to give a right of property in such trees, to the owners of the soil adjacent to such highways." The chief features of Mr. Wallbridge's bill are, that the owner of land "adjacent to any highway may plant trees on a portion thereof contiguous to his land, within twelve feet if in Upper Canada, or ten feet if in Lower Canada, from such land; but no tree shall be so planted at a less distance than eight feet from any other tree, or so that the same may be or become a nuisance in the highway, or obstruct the fair and reasonable use of the same, and that "every tree so planted in any highway shall be the property of the owner from time to time of the land nearest thereto, whose owner planted the same." This is all very well so far as it goes, but it is not enough. It fails to meet the climatic requirements of the case. Provision should also be made to have a given proportion of forest trees left standing on future clearances. Unless this course is adopted, our former great staple —fall wheat—will become, in the course of a few years, a mere historical recollection. The planting of clumps of trees in the corners of fields, in districts denuded of trees, should also be encouraged. They would not only tend to ameliorate the extremes of cold and heat; but afford shade to cattle, give protection to crops, and impart beauty to the landscape. In most sections, too, the varieties of trees planted might be turned to highly profitable account. The fact is unquestioned, that the silk-producing Mulberry, and the Chesnut that yields the "ready made bread" of Italy, will, with proper cultivation, flourish luxuriantly in this Province. Why should not the Mulberry be generally planted, and the production of silk be added to our list of profitable employments?

A Sad and Disgraceful Sight.

WHILE taking a short journey recently in a certain region of Canada which we forbear to particularize, we suddenly came upon a large orchard, which presented a strange spectacle for the leafy month of June. It was almost as bare and leafless as in midwinter, contrasting very gloomily with the luxurious verdure of the crops and woods by which it was environed. This orchard had been thus stripped of its foliage by the Tent Caterpillar, and the trees were absolutely full of abandoned tents and crawling worms. Passing on a little farther we came to another and yet another orchard in the same sad plight. They were utterly leafless, fruitless, and apparently dying, all from the same cause. There were other orchards in the vicinity of these that looked as trees ought to look in June, vigorous, well-leaved out, and full of young fruit. Whence this difference? Simply here: The owners of the stripped orchards had neglected to go round among their trees in early spring looking for and destroying the caterpillar nests. Their neighbours had taken this precaution. Calling at the house of a farmer in the vicinity whose premises generally testified to the industry and thrift of their owner, we enquired about his neighbours, whose orchards were in such a deplorable condition, We found that most of them had let their trees "take their chance" to use a common phrase. One had been once over his orchard to search for caterpillar-nests, but his search had not been very thorough, for his trees were as badly scathed as any of his neighbours. The farmer on whom we called said, "I never saw the caterpillar-nests so thick as the present season. I went through my trees thirty or forty times, determined if possible to be wholly rid of the pests." By taking this course he succeeded in saving his orchard. He had been obliged, however, not only to fight the insects bred in his own trees, but those reared in an adjacent orchard. We were astonished to learn from him that hundreds and thousands of the full-grown caterpillars had made their appearance in his orchard, and that on examination he found they had crawled all the way from his neighbours' orchard, a distance of some sixty rods! They would perform their pilgrimage during in the night, and in the morning he would find multitudes of them on his orchard fence and even making their way up the trunks of the trees! It had thus required a most assidious and persevering fight on his part to preserve his orchard from the destruction that had overtaken the orchards of others round about him.

It is utterly inexcusable and disgraceful for any man to allow a good orchard to be destroyed in the manner above described. The precautions necessary to be taken are so simple and easy that neglect of them admits of no apology. In fact a caterpillar-stripped orchard is a public advertisement of its owners negligence, and an open proclamation of his disgrace. Before the hurry of spring work has come on, as early as during the month of March, the nests of these destructive caterpillars may be searched out and got rid of. If left longer, mischief may be averted with very little trouble. After the grubs are hatched, and before they have escaped from their tents, they may be exterminated by being rubbed down with a swab of cloth fastened on the end of a pole, or by being scorched to death with the blaze made by igniting a bit of rag saturated with coal oil. By these, and such like simple means, the evil may be averted. Prevention is far easier and better than cure. Not only self-interest, but a due regard to the rights of others ought to prompt every owner of an orchard to take effectual steps to rid it of these troublesome insects. Even if they do not crawl to adjacent orchards in the grub state, they will fly to them when they attain to wings, and deposit their eggs for next season's increase. It is too bad that those who are diligent and attentive in the management of their own orchards, should suffer in consequence of the negligence of others.

Prevention and Mitigation of Rinderpest.

THE labours of the commissioners appointed by the British Government to inquire into the origin and nature of the Cattle Plague, may be regarded as completed by the publication of their Third Report. Some additional light has been thrown on the nature of the fatal malady by their investigations; and it is to be hoped that should the disease unfortunately break out in any other district or country, that veterinary science, profiting by the lessons evolved in Britain, will be better prepared to cope with it. The Rinderpest may, as the Commissioners report, re-appear at any time, and without warning. It hence becomes necessary not only that every means should be at hand for crushing it at once, but that every precautionary step should be taken towards its prevention.

The commissioners are totally opposed to the theory of spontaneous origin. They cling to the belief that

the disease was imported from abroad, and spread from the metropolitan market as a centre. "The precise channel by which the poi on came into the market cannot indeed be indicated, but the subsequent history of the disease affords, in their opinion, conclusive evidence against the assumption of spontaneous origin. In England it has followed the lines of cattle traffic, and in Austria and Prussia it has always been brought by diseased cattle. The commissioners are not of opinion that varieties of soil or even meteorological conditions have any marked effect on the spread of the disease; but they suggest that differences of elevation may be important; not a single outbreak having been recorded as having occurred at a height of 1,000 feet. In Yorkshire, the disease was almost entirely confined to the lowlands and dales, while in other counties it has been more severe, if not more prevalent, in marshy and low-lying districts." This statement carries with it its own lesson. We cannot alter elevation, but we may reverse the unfavourable sanitary conditions caused by the presence of water stagnating in the soil, poisoning both it and the atmosphere.

The commissioners also point out the danger which arises from deficient ventilation in cattle sheds, from the custom of retaining manure within or close to such buildings, and from a supply of impure water; all of which, unfortunately, are conditions of but too frequent occurrence. The plague may not, indeed, be produced spontaneously where those conditions exist, but once introduced under such circumstances, the poison spreads with increased virulence.

They also state that "the cattle plague varies greatly in its severity and fatality," having assumed a mild type, "while in others it has killed 95 per cent. of the cattle attacked." They do not attempt to account for this; they merely state the fact; and if attention to ventilation, to diet—*not drugs*— to the purity and abundance of the water supplied to the animals, to cleanliness in and around the buildings in which the cattle are housed, and the perfect drainage of their pastures, all conduce to a mitigation or a prevention of the evil, surely none can hesitate to employ every means in order to secure these advantages for their stock, whenever all or any of them are defective.

The commissioners believe that it is now the time to carry out important changes in the mode in which meat is supplied to large towns; and they recommend that special attention should be directed to the improvement of the slaughter-house system.

Dr. Voelcker's Annual Report.

THE Report of the chemist of the Royal Agricultural Society of England for 1865, is just to hand, and we cull from it a number of facts and results which will not be devoid of interest on this side of the Atlantic. The Professor has been engaged in a number of important investigations, requiring a large amount of skill, time and perseverence; several of them not being yet completed, and all of them having a direct bearing on the advancement of practical agriculture. The excessive drought that prevailed in England last summer, greatly interfered with the success of several of the Professor's field experiments undertaken by eminent farmers in different parts of the country.

ON THE EFFICACY OF SALT AS A FERTILIZER.

In several parts of the country, experiments were made with common salt (Chloride of Sodium), applied to potatoes, swedes, mangolds, and grass seeds, but generally with no very decided results. This the Professor accounts for in a great degree from the unusual drought and heat of the spring and summer, which prevented the beneficial action which salt, under more favourable circumstances, is capable of exercising. Owing to the above stated cause, the application of salt, especially when applied in pretty large quantities, proved absolutely injurious to vegetation. In one series of experiments in which salt was applied on very light soils, varying from 7 cwt. to 8 cwt. per acre, the results were alike beneficial, and in proportion to the amounts.

"On light soils, especially, salt appears to be useful for mangolds, and in all probability to turnip and swedes, and other root crops. The failure of the same series of salt experiments on certain light soils contrasting with their effects on other similar soils induces me to think that salt (and probably other valuable and highly soluble manures) is often put in the land too late in the season. Even on light land, I would suggest that 4 or 5 cwt. of salt be sown broadcast as early as February, and that its application be not delayed until the time of sowing of turnips or mangolds, and still less until the roots are singled."

The effects of salt, when used as a manure, have not as yet been very satisfactorily determined in Canada. On the whole, there is little room to doubt that, when timely and judiciously applied, its influence is beneficial to both roots and cereals. As early application of it, as practicable, in spring, as recent experiments point out in England, should be carefully kept in view. The crude potash salts which can now be obtained in Germany at very low rates, have been tried in England with marked success, especially on light soils, with mangolds or turnips. As these salts contain a very large amount of common salt, the Professor is unable to say whether the potash or the chloride of sodium which they contain, exercises the greater influence.

UNWHOLESOME DRINKING WATER.

Dr. Voelcker's attention had been called to the supposed insalubrity of water from different parts of the country, and in some instances found from careful analysis that the suspicions were well founded and that some water, although apparently clear and pure, is totally unfit for drinking either by man or beast

"As examples of bad watr, I may mention two.—In one of them, I found a considerable quantity of nitrogenous organic matter, and an unusually amount of oxide of lead, a constituent which occurs but rarely in well water. An accurate determination gave me nearly one-half grain of oxide of lead in the imperial gallon; and I ascertained that this poisonous oxide occurred in solution partly as bi-carbonate of lead, partly as nitrate of lead. On enquiry, I found that the water was naturally very soft, and came from a well situated near a manure heap, the drainage of which no doubt passed into it in a more or less oxydized condition. It is well known that in soils, more especially porous sandy soils, animal refuse matter gives rise to the formation of nitrates, which act upon lead. It appears also probable that decomposing animal matters exert a similar injurious effect upon leaden pipes. The unfavourable position of the well in this case, fully accounts for the contamination of the water with deleterious animal matter, and the still more poisonous oxide of lead.

"The second sample of water, unlike the first, which was slightly discoloured was perfectly colourless, bright and, as far as smell and appearance went, quite unobjectionable. On examination, however, it was found to contain an unusually large amount of saline constituents, and amongst these, no less than 19 grains of nitrate of potash in the imperial gallon, as will be seen by the subjoined analysis":—

An imperial gallon, on evaporation, left 72·05 grs. (dried at 300° Fahr.), containing

	Grains
Organic matter	1.51
Oxides of Iron and Alumina, and traces of Phosphoric Acid.	1.15
Lime	15.12
Magnesia	1.75
Sulphuric Acid	8.51
Chlorine	8.30
Nitric Acid	10.29
Potash, Soda, and Carbonic Acid	23.47
Soluble Silica	1.95
	72.05

These constituents combined together represent the composition of the water as follows:—

	Grains
Organic matter	1.51
Oxides of Iron and Alumina, and traces of Phosphoric Acid.	1 15
Sulphate of Lime	14.46
Carbonate of Magnesia	3.78
Carbonate of Lime	16.37
Chloride of Sodium	13.67
Nitrate of Potash	19.2
Soluble Silica	1.95
Total residue in the gallon	72.13

A water like the above is totally unfit for drinking, and bad for all domestic purposes.

ADULTERATED LINSEED-CAKES.

It would appear that oil-cake professedly made from pure linseed, (flax,) continues to be greatly adulterated, notwithstanding the exposures that have been made of late years by means of chemical analyses Bran, pollard, rice, dust, and similar cheap mill refuse are the principal ingredients substituted for linseed.

"In most cases the adulterating materials are cheap and less nutritious feeding substances than linseed; but occasionally cupidity and ignorance lead to sophistications which are highly injurious to stock fed upon the adulterated cake. Thus, in one instance, I found a linseed cake which had a very good appearance, and a nice taste, to be largely adulterated with croton oil beans, a powerful irritating poison. The cake in question was sent to me for examination, on account of the serious mischief which it had done when it was given even in very small quantities to cattle."

As linseed cake is now made in Montreal, Toronto, Woodstock, and perhaps a few other places, it will be satisfactory to Canadian farmers to be assured that this very valuable feeding article may be depended on as being genuine. The sample sent from the Toronto Oil Mills to the late Dublin Exhibition, obtained a premium and was highly commended for its quality. American oil-cake has long mantained in England a high character for purity, and consequently superior feeding qualities.

COTTON SEED MEAL.

This substance has recently been used in Britain, and generally, we believe, with satisfaction, for fattening cattle. It has, no doubt, a high feeding value, and may be safely used after the greater part of its coarse and indigestable husk has been removed by sifting; otherwise, it is apt to produce a clotted state of the bowels if given in large quantities. Dr. Voelcker gives the following analysis of such cotton-meal, from which its great feeding power will be obvious at once.

Moisture	8 86
Oil	29.34
*Albumenous compounds (flesh-forming matters)	22.75
Gum, Mucilage, and Sugar	7.58
Woody fibre (cellulose)	24.63
Mineral matters	6.78
	100.00

*Containing Nitrogen..... 3.64

These few illustrations clearly indicate the valuable service which analytical chemistry is rendering to agriculture. In a country like England, where manufactured (artificial) foods and manures are so largely in request, the farmer has no reliable guarantee against adulteration and frauds but in an exact chemical analysis: and this is now so well understood, that manures, &c. are purchased on the condition that the bulk of the article comes up to the chemical standard.

HAMILTON HORTICULTURAL SOCIETY'S SHOW.—Owing to the pressure of Editorial matter on our columns, we are compelled to defer our notice of the above-named Exhibition till our next issue.

Agricultural Intelligence.

The Crops.

THE *Bruce Courier* is led to believe that the crops in Bruce "never presented a better appearance than at present. The fall wheat especially attracts attention. There is a large amount of spring wheat sown, which also looks remarkably well. The general appearance of the country indicates a bountiful harvest, and that, coupled with the prospect of high prices, has reason to gladden the heart of the farmer, and make him feel hopeful for the future."

The *Peterborough Review* of the 6th inst., states that "the weather generally has been most auspicious for the growing crops. From all parts of the country we have the most favourable reports of the spring rain, which leave little doubt of an abundant harvest."

THE WHEAT MIDGE.—We learn from the *Ohio Farmer* that this insect pest is making great ravages among such of the fields as have partially escaped the effects of the cold of last winter. The midge is generally worse on fields in bad condition and such as are late in ripening their grain.

THE LOCUSTS.—The Salem *Republican* says that down in that region, the locusts for nearly two weeks have in countless numbers, taken possession of every green limb and branch, and by their continual, monotonous song, make a great deal more noise than music. As usual they came from the ground, taking the night for their time, and immediately began ascending trees, shrubbery, snakes, or anything else that favoured their aspiration for high places. They are reckoned to be of the sort usually called seventeen year locusts, (*cicada septemdecim.*) The year 1849 was the date of their last visit.

THE CUT WORM IN MISSOURI.—We learn from *Colman's Rural World* that, "this destructive pest has been unusually numerous the past spring. It has laid whole fields of young corn low. We doubt whether there has been so much re-planting of corn in many years as there has been the past spring. The season has been very cold and backward, which has been very favourable to their depredations. But the hot days of June are here, which will destroy them. We know of no way of getting rid of them but by outright slaughter."

PREMIUM FOR FARM BOOK-KEEPING.—The *Working Farmer*, believing that the carefully recorded experience of *practical* farmers is the most effective method of improving the agriculture of a country, offers "for the best Farm Record in the United States for the year 1867, a premium of $200; the award to be made by the American Institute Farmers' Club."

The following are the conditions on which the premium will be awarded:—"The selection in each State will be left to the Agricultural Society of that State.

Each State Society will determine the manner in which its decision shall be made, but for the double purpose of a division of labor and of subjecting the reports to the inspection of as many persons as possible, the Agricultural Society of each county be requested to select its premium report for competition before the State Society."

British Gleanings.

The Crops of 1866.

MR. TURNER, of Richmond, Yorkshire, whose annual reports respecting the state and prospects of the growing crops have long been regarded with interest by agriculturists, recently addressed the following letter to the editor of the *Times*:—

"Sir,—The period of the year has arrived when an idea may be formed of the probable character of our grain crops; and, in accordance with a practice of long standing, I beg to send you the impression made on my mind on this important subject, after a careful inspection of the crops now growing on a wide extent of country.

"We had a cold ungenial spring, not only in the north, but also in those southern counties where milder weather is expected to prevail, and in consequence there is less difference in the growth of our various field crops than is usual at this season; in fact, with the exception of a few patches of tares and some rye-grass, the crops as far south as London are not perceptibly earlier than those on the best portions of the northern counties; while in ordinary years we have been in the habit of thinking that harvest in those southern counties preceded us nearly a fortnight. Wheat always thrives best in a dry spring; this year its progress has been much retarded by wet and cold. The general crop, however, has not suffered so much in colour as has frequently been the case; in many places this is, no doubt, the consequence of thorough drainage, Oats, barley, beans, and peas have all come up fairly. Potatos have been extensively planted, but the general field crop is only just getting above ground; therefore, all we can say about it is, that the plants have come up regularly and well. Mangolds and carrots are up earlier, and with a stronger braird than they have shown for several years. Early-sown swede turnips were nearly all destroyed by the fly immediately after they came up. In most cases that land has been sown over again, and the general sowing of swedes and yellows has just been completed. During the last fortnight there has fallen a great deal of rain over much of England, though not in each district at the same time or to the same extent. The air has mostly been warm, and it is very delightful to see the improvement in growth and colour shown by trees and crops everywhere. I think the prospect for good root crops is better than we have had for many years. It is too early to give a positive or reliable opinion about harvest. but I think we may reasonably hope for an average, though we cannot have a great wheat crop; while looking at the state of the crops now, and considering the time of the year, I think we cannot possibly have an early harvest.—I have the honour to be, Sir, your faithful servant, H. J. TURNER.

☞ The rinderpest is decreasing in Great Britain.

SMALL TENANCIES IN IRELAND.—We learn from *The Farmer* (Scottish) that "there are in Ireland 444,231 tenants whose holdings only average twelve acres of land."

HAY FEVER.—A correspondent of the *Times* suggests as instant and sensible relief to this complaint the bathing the nostrils and closed eyes with spirits of camphor and warm water.

NEW ZEALAND TOBACCO.—A most luxuriant crop of tobacco is said by a British exchange, to have been recently growing upon some land at Epsom, in New Zealand, and is stated to be equal in appearance to the best grown crops in America. Unfortunately, however, there appears to be no one in the colony who understands the treatment of the leaf, or its manufacture into good merchantable tobacco.

THE FLAX FLY.—"It is stated," says a British Exchange that the flax fly is committing sad ravages in the new "flax crop in Suffolk. The fly is, in its present stage, a coal black. It afterwards assumes a white streak along its back. It is now about the size of a flea (oval shaped), and hops about as a land lobster or a flea."

HONEY IN FRANCE.—An English exchange states that "the imports of honey into France in the first three months of this year amounted to 7¾ tons, as compared with 26¼ tons in the corresponding period of 1865, and 37¾ tons tons in the corresponding period of 1864. The exports of honey from France in the first three months of this year were 256¼ tons, as compared with 60 tons in the corresponding period of 1865, and 160 tons in the corresponding period of 1864. Some of our readers will, perhaps, be amazed at our computing honey by the ton!"

THE "GRUB" AT THE ANTIPODES.—A British exchange learns that "this farmer's pest has been working sad havoc on the oat crops in the province of Canterbury, New Zealand. Unlike the grub of this country, which commits its ravages while the crop is in braid, this caterpillar attacks the stalk when the grain is nearly ripe, severing the head and strewing the ground with ears. It is described as crawling in millions on the straw, and the destruction wrought through the province is immense."

HALF-BRED HOGGS.—The *Dumfriesshire and Galloway Herald*, in referring to the value of fat sheep in that county, says:—"The rates realized here have been invariably very high for well-fed clipped hoggs, fully 9d. and even 9½d. per lb.; and the wool, if at 2s. per lb., is equal to nearly 2d. per lb. more. We have noticed before the rapidly-increasing practical skill in rearing and breeding these half-bred hoggs. We may particularize the case of one Annandale arable farmer rearing on his inferior grass 120 lambs from about 100 draft Cheviot ewes, reaching at Liverpool 57s. for all these hoggs before the middle of May, and this, with the wool (if at 2s.), leaving clear 70s. per hogg. Begun extra food of grain, &c., in February, costing perhaps 6s. to 7s. There may be probably a good many besides in Dumfriesshire and Galloway which equal this, and very many who are now following the same system, and approximatiug the same result. In this, the now most important branch of our farming, our south-western counties are perhaps fully before any other district of Scotland."

SCOTCH KALE.—A Perthshire correspondent of *The Farmer* writes to that journal on this topic as follows; "About a century ago the potato was introduced into Scotland. Before its introduction the kale vegetable was much used as food, especially in the north of Scotland, the kind being of a dark red or brown colour, with leaves nearly plain (not curled); this kind having a richer, more saccharine, juice than the curled German greens, or than any other known kind of the cole family, and requiring a less quantity of beef to make an excellent soup. So wholesome was the red kale regarded, that the medical man expected his bill would not be high when he saw not only the farmer's garden well filled with red kail, but also a rig of kale in a neighbouring field. So fond were the Scotch of their kale and kale-brose, that they sung of them as the English do of ale and pigs. The Scottish lad, rejoicing in his high physique, in courting, says philosophically—

"What ails you at my dad, quo' he, my mither, or my auntie?
Wi' croudy-moudy they fed me, lang kale and rante-tanto." "

FACTS ABOUT ROOKS.—On Monday last, says the *Inverness Courier*, two rooks were shot on a farm in Easter Ross. They were on a newly sown field of corn, and were observed to be very full—of grain, as was supposed—and were opened to prove how destructive they are. To the surprise and delight of the farmer, one rook was found to contain 113 and the other 73 grub entire, and *not one* particle of grain. Another correspondent of that journal, writing from Ross-shire, says—I observe a paragraph in last week's *Courier* about two crows being shot on a farm in Easter Ross with grub in their crops. A few years ago, I shot two crows on a field of wheat which was just braiding, and, as they seemed very full, I opened their crops, when, to my astonishment, the crop of one of them contained 898 grains of wheat, and that of the other over 500. Neither crow had a single grub or worm in its crop. Since that time I have often shot crows whilst feeding on newly-sown corn, and have invariably found their crops full of grain. I may mention that this last winter the crows have done my corn damage to the amount of at least £40, and that in spite of herding and shooting.

CROSSING POULTRY.—A correspondent of the *Mark Lane Express* writes on this subject as follows:—"Fresh facts have recently come to my knowledge, which certainly afford further evidence of the necessity of frequently crossing your stock; and, with your permission, I will give them to your readers. In 1861, I obtained for a friend of mine some young Aylesbury ducks. The next year he bred a considerable number, and in '63 and '64 he sent to a London salesman a goodly supply of very fine ones. He was now advised to import a drake from some other stock, but somehow he failed to do so. Last year his produce showed unmistakable symptoms of degenerating, but the opportunity of procuring new blood was again allowed to slip by; and this year—so he told me only yesterday—he has but one duckling to represent the whole of the eggs, a large number, he has put down. More has been hatched, but these have died from sheer weakness; and he has had a great many bad eggs. I should add, he has drafted out old birds, substituting young ones yearly. Again, I purchased two young ducks and a drake of him last autumn, for a gentleman who was anxious to get the stock, and although several seats of eggs have been tried, not one bird has yet been produced."

PRESERVATION OF MEAT BY SULPHUROUS FUMIGATION.—We clip the following from *The Farmer* (Scottish):

"We had an opportunity, on Thursday last, of seeing a fowl which had been preserved for more than a week in excellent condition for the table, by being subjected to fumigation with sulphur, according to a process recommended by Dr. Dewar, of Kirkcaldy. The process is similar to that which Dr. Dewar has recently practiced with great success for the prevention of cattle plague, and consists in simply placing the meat to be preserved in a room in which sulphur is burned, and which is closed as far as possible against the admission of fresh air. The process has been repeatedly tested within the last few weeks, and always, we are informed, with the most satisfactory results. A sheep's head was kept fresh for thirteen days; a crab, which is well known to be a peculiarly perishable edible, was kept perfectly sweet for eight days; and a lamb's head and pluck, after being kept four days and a-half, was prepared for the table, and pronounced to be in excellent condition. The plan succeeds quite as well with fish—haddocks, which had been fumigated two or three times, having been found quite fresh after seven days. It is evident that a process so simple, and so easily practiced, will confer a great benefit even upon private households; while, if found equally efficacious on a more extended scale, it is calculated to produce an entire revolution in the preparation and preservation of what are now known as salted provisions."

BRITISH CROP PROSPECTS.—On this subject, "A Practical Farmer" writes to the *Mark Lane Express* as follows:—"The state of our crops is another important feature in 'our summer prospects.' The drought did cause considerable alarm throughout all our chalk, sandy, and clay districts, and we fear the crops in these districts must cut up light. Upon the loams, fens, and marshes the prospects are good. The beautiful rains and charming weather we are now experiencing will do immense benefit, and may probably bring up the crop of the whole kingdom, taken collectively, to a fair average produce: we sanguinely hope it will. The potato crop, which has of late years assumed a national importance, cannot, I think, be a full average one; it was got in badly: it has come up irregularly, and, till the late rains softened the cloddy soil, was almost unmanageable. A considerable breadth has, however, been planted, which is a saving point as to a future supply. Of hay there will be an unusually large supply. Much land has been laid in to meadow, owing to the high price of stock. It will, however, be all wanted during the winter, as much straw will be converted into manure by sheep instead of cattle, and hay and roots must be their food. Of green-food crops the prospect is good. Mangolds come up well, and are growing fast. Swedes are going in favourably, and will soon be up. Turnips and colesced will have a fine soil for a seedbed, as the land is working favourably. We look forward to a good supply of winter food, which is one of our chief agricultural blessings. We also look forward to a good average corn crop, with a prospect of its making a more remunerative price than we have lately received. We believe that our next winter's foreign supplies will be less than for many years, and more particularly those from America."

Horticulture.

The Normal School Grounds, Toronto.

Herewith we present our readers with a sketch of the principal Normal School building, and some fine illustrations of portions of the magnificent shrubs that luxuriate in the grounds. As most of our readers are aware, these fine grounds and building

are centrally situated in this city, and are bounded on the north by Gerrard-street, on the east by Church-street, on the south by Gould-street, and on the west by Victoria-street. Respecting the building itself, we may just premise that it is a very fine one. Its site has been well chosen. It is considerably elevated above the business parts of the city, and a fine view of the bay, island, and lake is obtained from its upper stories. Our readers, initiated in the technicalities of architecture, will observe from the cut, that the principal part is constructed in the Roman Doric order of Palladian character. It has for its centre four pilasters of the full height of the building, with pediment surrounded by an open Doric cupola. The grounds and building occupy a rectangle of about eight acres in extent. Considerable skill and exquisite taste in landscape gardening have been displayed in laying out the grounds. Nothing stiff or formal is observable in the walks or in the parterres or flower beds which they surround. The creative ability and horticultural skill of the designer of these grounds—the late Mr. Mudie—must have been of a very high order. So far as ornamental gardening is concerned, this district has sustained an almost irreparable loss by the disease of that gentleman.

Mr. Forsyth, who has been for eleven years in charge of the grounds, has contributed much by his

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ability and perseverance to impart to the shrubs their present beautiful appearance. At the time that he became manager of the horticultural department, little had been accomplished in the way of ornamental floriculture. Now, however, under his judicious management, the beds of annuals, roses, &c., are equal if not superior to any in the district. Unquestionably, the collection of the former—numbering over one hundred varieties—is the best in the country.

One of the most interesting features that we noticed, on a recent visit to the grounds, was a fine collection of over 200 specimens of Canadian indigenous plants. In this fine assortment are about thirty ferns; a variety of cyprepidiums, or Mocassin plant; several fine specimens of the orchis tribe; and many other plants too numerous to particularize. As we

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minutely scrutinized this novel collection, we could not resist the impression that this was a most important movement, though inaugurated in a quiet unostentatious way. Many of our choicer native plants are, comparatively speaking, unknown. Many of them are particularly beautiful, and well deserve prominent places in our gardens and parterres.

Ornamental shrubs are, probably, the most interesting and attractive feature of the Normal School grounds. Of this graceful class of what may not inaptly be termed, dwarf flowering trees—there are to be seen not less than one hundred varieties. We regret that space will not admit of us printing the entire list, which we possess. The bare mention of the specimens, which we had drawn by our artist at the time of our visit, must, at the present, suffice. First, however, we must premise that our illustrations represent mere "sprigs" of the respective shrubs. To have attempted to have shown the entire tree, would have been to render foliage and flowers an indistinct and ill-defined mass. We chose rather to exhibit, as nearly as possible, the form and habit of the leaf and the flower—and to state in addition that the respective shrubs may be grown in any shape desired. They bear pruning well, and may be raised and trimmed to any height from two to ten feet.

Our first cut shows an outside twig of the *Weigelia Rosea*. It is a shrub of great merit, possessing the combined properties of being showy, free flowering, perfectly hardy, and free from disease. The bloom is of a variegated pink, and a bush in full bloom, forms a magnificently beautiful object.

In our second illustration is shown a small outside branch of the *Deutzia Gracilis* or Slender Deutzia. This plant is a native of Japan; and is remarkable for its compact habit of growth, its rich, deep green foliage, and its profusion of white flowers.

Our third wood-cut exhibits the flowers and foliage of a shrub which we are glad to perceive is becoming a general favorite in our city lawns and gardens—*Philadelphus Grandiflora* or large Flowering Syringa. The blossoms of this fine shrub emit a rich strong perfume, something resembling that of the orange. It admits of easy culture, and should have a place in every flower garden.

In addition to the shrubs and delightful flower plots, the visitor cannot fail to admire the splendid collection of ornamental trees which grace the grounds. A twig and flower of one of them—*Liriodendron Tulipifera*—are shown in our last illustration. This fine tree is a native, we believe, of the South-Western States. The foliage, as will be observed, is of a very peculiar form, while the flowers,—which are pale yellow, tinged with dark orange—sometimes attain the size of an ordinary tea-cup.

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The following trees in the grounds are also deserving of notice:—*Catalpa Bignonioides*, native of South

Western States, remarkable for its large foliage and showy flowers, which are white, tinged or dotted with violet and purple; Ash-leaved Maple, European Sycamore, purple-leaved Sycamore, Norway Maple, European Larch, cut leaved Lind n, White leaved Linden, Weeping Linden, Weeping Ash, Quince leaved Cotoneaster, Silver Shepherdia, Halesia Tetrepetra (snowdrop tree), double-flowered Cherry, Hawthorn, double-flowered Hawthorn, (white,) double-flowered Hawthorn, (pink,) Austrian Pine, Scotch Pine, Norway Spruce, Balsam Spruce, Arbor Vitæ, American, Chinese and Siberian.

Cineraria Culture.

(By Geo. Vair.)

The Cineraria (from *Cineres* ashes, in reference to the grey down covering the surface of the leaves) from its diversity of colour, has lately become a great favorite with florists, and it may be said that there are few flowers to which more interest is attached than the numerous members comprising the genus Cineraria. Requiring but little management, remaining in bloom for a long time, and starting, as it does into a variety of colours, it forms a most attractive object, not only in the Conservatory, but also in the window of the cottage, throughout a great part of the winter and spring months. Its propagation is a task of no great difficulty, being easily increased from seeds and cuttings. The points of a perfect Cineraria are, that the plant should possess a neat compact habit amply filled with medium-sized foliage, and the bloom stems rise freely from the leaves so as to exhibit the flower in a conspicuous manner; and the more nearly each floret approaches an unbroken circle the better, while the colours ought to be clearly defined and decided. Of course novelty, in these as in many other things, is an acquisition, although purchased at the expense of the preceding properties.

Cineraria culture may be divided into two seasons for winter and spring blooming; and this division rests on the mode and time of propagation. In order, therefore, to procure blooms for winter, say January, I make a sowing early in May in shallow seed pans; with soil suitable for the germination of the seeds, viz., loam and leaf-mould, and a small quantity of silver sand. In a few days the young plants will make their appearance, if placed in a gentle bottom heat; in three or four weeks, the young plants will be ready to prick out, which I do with thumb pots, watering carefully with a fine rose, and shading for a few days from the hot sun. In about four or five weeks more, which will bring the time to about the last week in June, I again pot them into four or five inch pots. The compost I use for this potting is loam, with rather a small quantity of manure well decomposed, (in fact if the loam is of first rate quality I prefer it without manure, as I find that the plants keep much better over the hot summer months, and come out better in the fall,) I plunge the pots to nearly the rim in coal ashes, (tan or saw-dust will do,) placing over them a frame and sash facing the north, in a position where the plants will get the forenoon sun only. In this frame I allow them to remain over the hot summer months, watering carefully in the evening when required, the sashes always on but tilted night and day, thus securing them from heavy rains.

If any of the plants is attacked with the green fly, (*Aphides,*) my plan is to prepare a sufficient quantity of tobacco water, making it pretty hot, - 130 to 135 degrees *Fah.* will not injure the plants. Pass the fingers just over the edge of the pot, and under the leaves of the plant to be operated upon, immersing them in the preparation, shaking them slightly so that every portion of the leaves get thoroughly wet. I then place the plant in its former position, and almost immediately syringe with cold water. This course never fails to destroy the pests, and does not injure the plants if done expertly. Toward the month of September, when the heat of the atmosphere diminishes, and the nights become chill and humid, the vegetation of Cinerarias, previously almost insensible, suddenly assumes a fresh activity. They prepare themselves, as it were, to throw out their leaves and develop their bloom stem. As fresh leaves begin to show themselves, having previously prepared a suitable soil for them of good turfy loam and leaf-mould, old cow dung, the older the better, to which add some charcoal, and a little broken bones, I give the whole of the plants a shift into six and seven inch pots, with plenty of drainage. Having first removed as much of the old soil as possible, and loosening the young fibres, I replace them again in the frame, treating as before, with this exception, that I do not plunge the pots any more at this season, (September.) Crowding together ought at all times to be especially avoided. Give plenty of air, and see that none of the plants suffer for want of water.

As the plants root very fast at this season, in three weeks more, if all has gone on well, they will require shifting into larger pots, when large and handsome plants are wanted, still bearing in mind that the later they are shifted, just so much will the blooming season be retarded. The Cineraria delights in a low temperature. I keep them outside in the air as long as possible, as it is hardly possible to give dates, care must be taken that they do not get frost. Prevention is better than cure, better then to have all the plants in the green-house or pits two or three days to soon, than five months to late.

(To be Continued.)

Treatment of Dahlias.

BY J. P. NORRIS, PHILA.

The Dahlia is, perhaps, one of the easiest of all plants to degenerate. This is owing to two reasons —first, that the root is often allowed to increase in size, and is not properly divided; and second, that they are frequently planted too near together, and the pollen of one plant impregnates another; an imperfect flower being the result in future seasons. Of this latter assertion we are not positively sure, but it is the only reason that we can see to account for the alarming change in colour in the flowers of Dahlias planted near to each other.

If a Dahlia root is allowed to increase in size from year to year, it is almost certain to produce inferior flowers. The root being so very large has so many sprouts that each sprout chokes its neighbour, and like a hill of corn not properly thinned out, the result of the whole is inferior. A medium sized root will produce much finer flowers than a very large one. But it is possible to go to the other extreme and make the root too small. This is frequently done by dishonest flourists who are too eager for gain. If you are buying a new and rare Dahlia, however, you must not expect to get a very large root. In the latter case it is advisable to allow the root to expend all its energies on its growth and not allow it to flower the first season.

Again, many Dahlias are much injured by allowing them to flower as soon as they show any inclination to. All buds that appear while the plant is growing should be cut off; although you deprive yourself of early flowers by this process you secure much finer ones in the end. And who would not have one perfect flower rather than a whole bunch of imperfect ones?

Very many Dahlias are injured by planting too early in the season. They spring up and make a rapid growth and are in flower in July. The sun being too hot for them at that time, the flowers are necessarily imperfect. We are of the opinion that from the first to the fifteenth of June is quite early enough to plant. Dahlias when planted at this time, flower in September and October, when the rays of the sun have lost a great deal of their power. Besides, in the fall there are comparatively few flowers, and it is then that Dahlias are appreciated; but when they come in the full height of the flower season, when roses and other finer flowers claim the attention, they are very apt to be forgotten or overlooked. The fall is undoubtedly the time for the Dahlia.—*Gardener's Monthly.*

Pet Plants.--The Southernwood.

The Southernwood (Artemisia Abrotanum) bears the names of Lad's-love, Old Man, *cum multis aliis.* There is a homely charm about this tiny little bush which endears it to every one, and its various names have been household words among rich and poor throughout Christendom for centuries. From its merits alone it has kept its ground against all comers) Being a native of the south of Europe, it has travelled northwards, or rather its sweetness has caused it to be carried to every district, hall, and cottage in town and country. You see it in the neat patch of mixed flower garden in front of the labourer's cottage, and the toy garden in the crowded town has a hapless bush of ill-used Southernwood, struggling with soot and sunshine, to keep a green leaf in view of the country-bred matron who despairs of seeing her native place again, but dwells upon the ideal beauty of wold and lea as she looks upon this quaint old-fashioned pet. In some parts of Scotland it is usual to carry a nosegay to church, and the venerable spinster may be seen with the Book in hand by way of foundation, and the snow-white pocket handkerchief neatly folded over that, and the sprig of Southernwood, fresh gathered, on the top, with more or less of other garden gear, as the season of the year and state of the garden will admit. Southernwood, from its sweet scent and feathery foliage, is admirably adapted for setting off gay flowers to advantage when used as a back to a nosegay, and for more than two-thirds of the year this supply may be depended upon. I should be glad to know how the plant came to be called Ouveringie in Scotland.

If we compare the business habits of this fragrant feathery bush, and the long signal service it renders, we shall see the advantage it has over many of the other denizens of the flower garden. The Myrtle is infinitely its superior, but the Myrtle, though sweet and beautiful, is tender, and must be housed to keep it alive in any of the midland and northern counties. The Rose, that universal favourite, is hardy in habit and gorgeous in flower, and not only deliciously sweet-scented, but having the property of retaining that sweetness for years among the dry petals that adorned its head in the heyday of its beauty; but for many a day the Rose plant is without a leaf, and eke without a flower, for it is not like Tom Moore's "silvery Almond-flower, that blooms on a leafless bough," and the leafless twigs of the Rose, moreover, have an angry look about them, and are not fit to be touched, being armed with prickles to irritate, but by no means adapted to please. How different from drawing the hand over the green feathery head of the Southernwood for the fragrance of its homely perfume!

The first order that I got in my first situation in England was an order from my noble employer to propagate this plant, and when I was taken round the garden to see it. I could not help complimenting her ladyship on the fine specimens of Southernwood that had got prominent places therein. In the race after rare plants, young men frequently despise plants of merit, merely because they are common. Easily propagated by cuttings, a stock of Southernwood may very soon be got up, and if there be any gay flowers to back up, this fine green mantle thrown around them will be found very useful, for there is often a terrible baldness and want of foliage to be seen in gardens gay with masses of brightly-coloured flowers.

There is a species of gardening which, for want of any delicate term to express it, I may call toy gardening. It has nothing to do with order, or even with common sense, for the plants are grown, or rather exist, by innate force; delved up in the middle of summer, and transplanted when in flower, they eventually recover, and, biding their time, bloom in some out-of-the-way nook, and are all the better for the old stone wall or overhanging bush that seems to be smothering them—any plant requiring good sunlight, air, or attention, could not hold out against the odds for a fortnight. In a densely-populated place the prowling of cats at night would break down anything tender or herbaceous, but the stiff shrubby style of Southernwood fits it for such toy gardening. In a flower-pot the plant looks very well; and in a box by a window among other plants the fair foliage and homely fragrance of this old pet, are not to be despised.—*A. F., in Gardeners' Chronicle.*

Effect of the Perfume of Flowers.—The presence of the perfume of lavender in the air increases the power of absorption of heat sixty times, and aniseed 372 times; hence the perfume arising from a bed of flowers increases the temperature of the air around them.

Temperature at which Seeds Germinate.—The celebrated Swiss botanist, M. A. De Candolle, has published an account of numerous experiments upon the temperature at which seeds will germinate. We give a few of his results, with respect to well known plants, reducing the temperature to the Fahrenheit scale. The seed of common white mustard will germinate at or a little below the freezing point. While white clover remained dormant at 41½ deg., it germinated when the temperature was raised only one degree above that. Indian corn would not start at 42 deg., but germinated at a temperature very near 48 deg. Melon seeds refused to germinate at 53 deg., but did below 62½. While there is a limit of temperature below which each particular seed will not germinate, there is also a limit in the other direction, and seeds fail to start when the temperature is too high—the point as in the other case, varying with the species; the greater part of some seeds of white clover did not germinate above 82½ deg. "Thus seeds only germinate between certain limits of temperature, and those which can only do so within narrow limits are least able to extend themselves geographically."

Asparagus the Second Season after Planting.

THE new beds were planted in the third week of March last year; they were prepared in the ordinary manner, and a bountiful supply of good rotten dung well incorporated with the soil. The plants were covered two inches in thickness with nice fine earth; they were not planted in drills, as many plant them, but every root was disentangled, and then carefully spread out upon an even surface on the bed, and covered as above described. At the time of planting, the plants were two years old, and I might here advantageously state that I was very careful in not allowing the plants to suffer anything from their being out of the ground, for as soon as they came to hand they were unpacked, and the roots spread out upon the floor of an open shed, and then covered with dry earth. This precaution enabled me to keep the roots perfectly free from harm until the condition of the land out of doors would enable me to plant them, and as I did not order them until the middle of the month, I had only to wait about three days after I received them before they were comfortably placed in their permanent positions. I have been thus careful in detailing this procedure because I am convinced that the greatest secret in forming new beds of asparagus is not to let the young plants be exposed any length of time to the air, for if you do they become shrivelled up after the fashion of dry sticks, and the nutriment stored up in them—upon which they depend solely to start them into active growth—is wasted by the action of the air, and then people wonder why their plants die, or if they survive the injury, only come up very weakly, so that in the room of getting asparagus the second season, they have to wait until the fourth.

As I have promised to detail my system throughout, I must tell the reader that immediately after the dry hot weather sets in in April last year, the beds received a good soaking of clear water; this I well remember gave them quite a start, and as soon as all the crowns had thrown up one grass each, I mulched the beds with a covering an inch in thickness of short grass from the lawn. In a few days after this, as the weather was still dry, and the young grass sufficiently advanced for me to tell the position of every crown, I went carefully through the beds with my feet, and so trod the ground between the plants. I am so well satisfied that the utility of that simple half-hour's work can never be estimated to its full extent, that I would say to every reader do the same with all newly-planted beds. If they are made as they should be, no one would ever think of treading the ground at such a season, either before or after planting, unless the land was in an unusual state of dryness; and if it was, I believe the after-treading would be equally beneficial as in my case. Owing to the unusual hot dry weather of April and some part of May last year, the first mulching of short grass was soon withered up, but this I replenished again, but not until I had given the beds a thorough soaking of sewage water; I then applied another covering of short grass immediately after: this kept the surface of the bed and the roots in a moist growing condition. I continued the application of this sewage water up till the end of July, at intervals of about a week, and the progress they made was somewhat astonishing. After the first week in August, the little of the withered grass that was left, with all weeds, was carefully picked off, and during that showery month I gave it three separate sprinklings of salt, about 8 lbs. to a 4-feet bed 50 feet long. At each sprinkling at this stage the plants grew amazingly, and the only after-attention they had until the autumn was careful hand-weeding, for I never permit a hoe to be used amongst them.

Thus end the details of the treatment during last summer; the treatment in the autumn was only what should be given in every case of newly-made beds. The stems were cut down at the end of October, and then each bed received a covering of rotten dung all over to the depth of three inches, and upon this was added four inches of earth dung up from the alleys; in this state they laid all the winter, and all they have had done to them since is the top surface just loosened up in the beginning of March, and once since hand-weeded.

I have been very particular in noticing these little points, because they constitute the very essence of good management; but they are too often overlooked by those who could do well to observe them. But there is one other very important matter that I ought to give a caution about: I mean the common practice of burying the crowns too deep at the time of planting. It is the system of many to put at once the required depth of soil upon the roots; but this is radically wrong, as a little reflection must convince everyone. To bury such roots eight or ten inches underground directly after removal, at such a season of the year, when the earth is down to its coldest point, and to shut them out of the influence of both sun and air just at the time when they most require it, is to me a most unbusiness-like manner of proceeding. One would think that people who do such things had a greater delight in killing them than they had in seeing them rise out of the ground strong and healthy.

It is a much better plan to cover them with not more than three inches of earth at the time of planting, adding four inches in thickness more the next autumn and three the succeeding one. When this is applied, there will be sufficient to enable a careful person to fork up the beds in the spring, and to allow a portion of it to crumble down into the alleys, as seven or eight inches is quite enough soil upon the bed for the grass to find its way through.

The result of the above management in my own case this season is the production of grass as fine as some I am cutting from beds five years old; in fact, much inferior grass is sometimes sent both to market and to private tables than these beds have produced in the space of fourteen months. But the reader must bear in mind I have not cut from them, nor do I intend to do so this season. I am aware that the above result may appear to some an improbability, but at the same time I can assure them I have no interest to serve in overstating the case, and it is open to the inspection of any interested party.

But my chief reason in penning these notes is to call the reader's attention to the fact that we need not in the case of making new gardens wait four years before we cut asparagus from it.

If I were engaged in the work of getting up a supply of new beds, I should proceed in the following manner. I will suppose that four beds seventy feet long, when well established, would serve for a permanent supply; I would make these, and then add to their number two more. These last two I should reckon upon for getting a supply for the second and third year for planting. After this the permanent beds would be in excellent condition for cutting, and the other two might be destroyed, or left one more year to be taken up for forcing. By this means a supply of home-grown grass is to be had without any serious outlay, in two years' less time than the majority of people think it can be had.

J. C. CLARKE, *in Gardener's Magazine.*

The Household.

Homedale Farm.

SOILING AND ROOT GROWING.

Mr. Perley's agricultural reading had interested him among other things in the system of "soiling" cattle, as it is called. He was well convinced that on our ordinary plan of pasturage, a great deal of land is wasted and impoverished. While not insensible to the comfort yielded to farm animals by a free range in the meadow, he knew very well that scant feed at certain seasons, exposure to the noon-day blaze of our burning sun, and other inconveniences, detracted much from that comfort, and helped to equalize the lot of cattle left to roam, with that of those limited to the range of the shed and barn-yard, but abundantly fed. Theoretically, he was well satisfied of the superiority of the soiling method, but he saw a great practical difficulty in the cost of labour. He doubted, in short, whether it could be made to pay when stock was kept in due proportion to the size of a farm. He thought, however, it was the part of wisdom to experiment on a small scale that he might better judge how it was likely to work. Not getting on to his place very early in the season, and finding it difficult to put every desirable thing in operation at once, he did not sow any spring vetches, a crop he would have resorted to for early soiling,—but made his first trial with Indian corn. He thoroughly ploughed and cultivated rather more than an acre of land adjoining the barn and cattle sheds, gave it a dressing of plaster, and sowed it broad-cast with dent or horse-tooth corn, the beginning of June. Though this large variety of corn will not ripen in our climate, he saw no reason why it should not make a rank, thick growth of green forage. The result more than equalled his expectation. It sprung up and grew with surprising rapidity. By the middle of July, there was a good cutting of juicy food, and the two milch cows, Brindle and Bess, got the benefit of it. They had a run during the day in a piece of pasturage consisting of a few acres of rather neglected land, on which there was quite a growth of scrub-oaks and bushes of various kinds. Mr. Perley meant sometime to grub, plough, and reclaim it, but meanwhile it answered a very useful purpose as a wild pasture lot. Every evening the cows were brought up and yarded until morning. When the green corn forage was tall enough to begin to feed it out, the cows were supplied with it, at first sparingly, but at length, bountifully. The young folks were able to take this job in hand. Charles felt himself man enough to mow down the green corn with a light scythe, while Lucy and Georgy thought it nice fun to gather up the stalks and feed them to the cows. They were repaid by the manifest delight of the creatures, and by the increased quantity of milk they gave in consequence of getting such liberal supplies of juicy food. As the summer wore on, the corn made a prodigious growth. It shot up thin and spindling to the height of 8 or 10 feet, and was the admiration of all beholders. The children were fond of playing hide-and-seek in it though it must be confessed that sort of thing resulted in some mischief in the way of treading down stalks here and there. Brindle and Bess were unable to devour the mass of green feed yielded by the broadcast corn patch, and as the pasture grew bare toward the end of the summer, the horses and other stock had many a nice toothsome meal from it. On the whole, the little experiment was a very satisfactory one, and showed what might be done on a larger scale. Mr. Perley resolved never to be without a reserve of green fodder, even though necessity compelled him to adopt in a measure the ordinary plan of pasturing. By means of clover, vetches, and corn, he felt sure he could greatly help the spring and summer support of his animals, and economize the occupancy of grass land. He was especially pleased with the green corn crop, and often expressed his wonder that farmers did not make greater use of it as a reserve supply, especially for such times of deficiency in the grass yield, as now and then are sure to come through drought and other causes.

As a matter of course Mr. Perley sowed a good breadth of turnips. He was a thorough convert to that system of husbandry which grows root crops, fattens cattle, and makes piles of manure. To his regret he could only devote six acres to turnips the first year of his operations at Homedale. But some of his neighbours thought him crazy to take so much land for a turnip patch. "He had no stock hardly, how could he consume so many ruta-bagas? Did he think it would pay to haul them to Brantford and sell them for 8 or 10 cents a bushel? Could he reasonably expect to market all he would grow if he got a good yield? Thus they queried, while Mr. Perley quietly kept his own counsel, intending before next spring to prove the wisdom of his method of procedure. His plan was to wait and see how his turnips were going to yield, and then embrace opportunities of buying some cattle and sheep at reasonable prices so as to have sufficient stock to consume his root crop, and turn it into meat and manure. He knew that every autumn there were auction sales of surplus stock by farmers who were not well enough posted in their business to fat up their spare animals, and he believed he should have no difficulty in buying up at twelve months' credit if he desired it, all the sheep and cattle required to consume his straw, and turnips. The vision of a huge manure heap danced before his eyes as he revolved this part of his plans, and he saw his farm in prospect not only yielding fine crops, but increasing in fertility from year to year.

The children made themselves useful in putting in and caring for the turnip crop. Charles insisted on working the seed drill, to which he had become somewhat used in the spring sowing of the kitchen garden. He said it was like playing with a toy wheelbarrow. But he found it no child's play to wheel it over drills of a six acre turnip patch, and was glad enough to

let his father and Peter take turns with him. However he was quite proud at being able to say "*we* sowed the turnips." When it was time to thin the turnips, the children helped. Charley soon learned to use the turnip hoe, and to strike out gaps where the plants were thick. But he and the rest of the little folks were more useful in doing the hand thinning. It was very little trouble for them to stoop down and pull out the extra plants so as to leave only one in a place, and that the biggest in the bunch. It was wonderful how fast the turnips grew. Every time rain fell, you could almost see them grow. Happily the insects did not trouble them much, and in a very short time, the field seemed to be one solid mass of green. When once the leaves began to shade the ground, the doom of the weeds was sealed. They could not grow under the dense foliage, and were fairly smothered down. Mr. Perley explained to the young folks that this was one great benefit of a good crop of turnips. It cleans the ground and leaves it free from weeds and very mellow. Besides as the turnip is a broad-leaved plant and derives much of its nourishment from the atmosphere, it does not exhaust the soil, but leaves a good store of plant food nicely prepared for a succeeding crop of grain.

Something about Pianos.

On this subject the *Boston Journal* makes the following pertinent remarks:

"It would be an interesting investigation to trace the growth and influence of this instrument from its first rude beginning to the present time. Its course has been parallel with that of modern culture, and the philosopher might almost find in its successive modification, from the first rude harp to its latest and most highly perfected descendant, a Chickering or a Steinway Grand, an epitome of the world's history for hundreds of years. Without a Piano, what would become of our modern civilization? Consider how extensively it serves as a medium for expressing the whole range of our emotions and sentiments. The disastrous consequences that would result from suddenly cutting off this organ of expression are almost incalculable. It would be like abolishing one-half of our language. Certainly our Pianoforte makers deserve to rank high among public benefactors. It is, however, not our purpose to indulge in philosophical or desultory fancies about Pianos, but to note a few facts in connection with them of practical utility. Accordingly we proceed to state some of the results of our experience, and particularly as to the purchase of a Piano. An instrument made of the very best material and workmanship, by a first-class maker, has proved, in our experience, the cheapest, although costing originally, perhaps, a few dollars more than the more showy ones of other makers. In buying, therefore, a Piano for musical purposes, get the best; but if wanted only as a parlour ornament, where fine quality of tone and true sympathetic expression are no objects, the cheapest will answer as well. There are, however, a number of Pianoforte makers who all profess to make the best instrument, and it is very difficult for a buyer (except advised by a thorough and high-standing musician or mechanic, whose opinion cannot be influenced by mercenery considerations), to choose between them. The rule that ought to be adopted is to patronize the most prominent makers, buy from those who have the highest reputation, and whose popularity has been of the longest standing. A popularity that has stood 20, 30, or 50 years, is certainly a much surer indication of uniform excellence than one that dates back only a few years. A sham reputation may sometimes be built up by puffs and glaring advertisements, paid testimonials, large commission paid, and other tricks of charlatanry, of which the general public is not aware, and for a while may seem very imposing, but it cannot stand the test of time. When persons buy instruments of makers such as Chickering, Steinway, or Dunham, and use them for ten or twenty years, they could have no doubt or hesitation in purchasing a new Piano from the same maker. It is of great importance to know what is expected in a good Pianoforte. It is not a thundering noise, or a confused jumble of sound, or an unwieldy mass of tone. A Pianoforte is for the interpretation of the highest sentiments of the heart; and to express the gay sportiveness, and the solemn meditation of the soul. For all this there is needed a perfection as near to the human voice as possible. The qualities sought for should be a purity and flexibility of tone, to express intelligibly the most delicate shades of sentiment, or the most powerful utterance of passions, without which the Piano is but a tinkling cymbal. The quality of material used in the mechanism is of such high importance that no matter how good the tone may apparently be, if the instrument cannot retain its pitch and harmony for more than a few weeks in succession, it is worthless. Once having purchased a Piano, no one wishes to be subjected to the inconvience of exchanging it, or to be forced to vexatious expenditure for repairs. Purchasers should therefore well calculate ere they make their choice. From the high reputation enjoyed by makers like Chickering, Steinway, or Dunham, whose Pianos are recommemded by musicians of such universal celebrity, as DeMeyer, Thalberg, Strakosch, Jael, Patterson, Bassini, Sontag, Hoffmann, S. B. Mills, Timm, Wheli, W. Mason, Theodore Thomas, and many others, our readers may rest assured that in getting an instrument from the above-named makers, they will get the best, and will do the best for their own interest."

The above remarks embody sound wisdom, and imply much more than, at first sight, is apparent. In the musical instrument trade, as well as in so-called medical specifics, "glaring advertisements, paid testimonials, large commissions, and other tricks of charlatanry," are in wide and active operation. In these respects, the musical public have paid handsomely for their "whistle." Miss Semiquaver, induced by the *disinterested* suggestion of Mons. Crotchet—her music-master—commissions him to purchase her a Piano. She experiences a transport of gratitude that a distinguished performer like Mons. Crotchet should manifest such a deep interest in her as is implied by the sacrifice of time necessary to search after, and procure her a "splendid instrument at the lowest possible figure." Mons. Crotchet at once proceeds to the establishment of a maker, or his agent, and forthwith proceeds to disclose his disinterestedness by bargaining to receive, *sub rosa*, ten or fifteen per cent. commission. The maker, of course, cannot afford to make such an enormous reduction on the market value of his instrument; and consequently the *real* value is increased by thirty, forty, or fifty dollars above what Miss Semiquaver would have paid for the same instrument if she had herself directly effected the purchase. If the house visited by Mons. Crotchet be of a respectable character, and one whose integrity is above such disreputable practices, our professor "proceeds to some other house," that cares little for the honour or honesty of the bargain so long as the instrument is sold, and the proceeds pocketed. Miss Semiquaver is thus provided with an inferior instrument, at a monstrously exorbitant price. We do not say that this is invariably the case. We, however, believe it to be the rule; although there are some honourable exceptions. Young ladies and their parents should know, once for all, that when they buy an instrument of a good maker—such as those mentioned above—and receive from the vender a guarantee for a given number of years, the employment of an *interested* agent in the matter is not only superflous but unwise. It is right that our rural population should be posted in this matter. Music is now becoming a general accomplishment of young people of both sexes. Its refining and elevating tendencies cannot be exaggerated, and we venture to hope that parties about purchasing Pianos will give the foregoing remarks their attentive and earnest consideration.

A Few Hints to Young Ladies.

The following hints, spoken in the very plainest terms, are respectfully submitted by one of the sex:—Don't make a confidant of the first interesting young lady you meet. A woman can't keep a secret any more than a sieve can hold water; and ten to one she'll tell the story to the sister of a nice young man of her acquaintance. Then you can imagine the consequence. Don't sit down to your crochet work or embroidery unless you have first mended that hole in your stocking. No use crowding it under the heel of your shoe. Rags, like murder, will out; and they speak with terribly loud voices, and at inconvenient seasons sometimes. Don't undertake to write skim-milk poetry whenever you feel a little disposed toward enthusiasm. Go and do a kind action, speak an encouraging word to somebody, if the "poetic impulse" must have vent. Depend upon it, you'll be better satisfied afterwards. Don't pretend to be angry because gentlemen have the audacity to look at you when you promenade the streets in your best bonnet. What do you go there for, if not to be seen? The more you affect indignation, the more the offending wretches won't believe it. Don't pay thirty or forty dollars for the aforesaid bonnet, and then complain that "pa" is in such narrow circumstances that you cannot afford to give twenty-five cents in charity.—Don't eat blue and yellow candies the whole time, like a mouse nibbling at the pine-apple cheese, and then lament because you haven't any appetite for dinner. Don't keep a gentleman waiting half an hour when he calls, while you put on lace and ribbons and arrange curls; he isn't a fool, whatever you may think on the subject, and will probably form his own ideas upon your original appearance. Don't run and hide, like a frightened rabbit when a gentleman puts his head into the room where you are sweeping, and dusting. If there is anything to be ashamed of in the business, why do you do it? Don't proclaim to the world that you can't exist without six Paris bonnets in the year, and that life would be a burden without jewelry and diamonds, and then wonder why the young men "shy off." And above all, when some one *does* propose, don't say no when you mean yes! He may take you at your word! If you follow all these precepts, you may one day succeed in getting married, and that, you know, is the summit of all earthly ambition.—JANE, *in Miner's Rural.*

The Baby Waking.

DID you ever watch a baby waking from its morning nap? It is one of the prettiest sights in the world. There is the crib, with its small preparations and snow-white drapery that covers something, outlined round and plump. There is nothing to reveal what it is; not the slightest movement of the pillowed whiteness that is visible—no sound to indicate keenest actual life, until the hour hand of the clock that stands sentinel like yourself, has twice made its circuit. Then, there is a slight pulsing in the white drapery, a small pink tremulous hand, fair as a rosebud is thrust out, and from the nest thus broken into, appears a round diminutive face, with wide open eyes that have not much speculation in them yet; soon however they cease to stare and become questioning, serious, as if wondering what kind of a world it is they open upon, and the head lifts itself just a little, and two snow white feet stand up spasmodically with a simultaneous movement each toe of which has an attendant dimple. But the head is too heavy—it falls back on the pillow with its own sweet weight, the hair all damp and golden—the cheeks peachy—the mouth just pouted, as the angels kissed it in dreams. A first lingering go-o-o comes from its rosy depths, sweeter than any bird's song, for it has a spirit tone and yet retains a thrill of its native skies. The chubby hands are lifted imploringly, persuasively, the baby is awake and ceases to be an angel.—MRS. M. L. RAYNE, *in Prairie Farmer.*

☞ By laying a piece of charcoal on a burn the pain subsides immediately. By leaving the charcoal on one hour the wound is healed, as has been demonstrated on several occasions. The remedy is cheap and simple and certainly deserves a trial.

Markets.

Toronto Markets.

"Canada Farmer" Office, July 14, 1866.

We have no particular changes to notice since our last issue Trade, on the whole, has been dull; and until some portion of the harvest is secured, it is probable there will not be much improvement.

Flour.—The market for the week closes dull and drooping. Receipts have been 1,722 barrels; sales, 200 barrels on private terms; 100 barrels No. 1 at $6 40; 200 barrels No. 1 at $6 40; 300 barrels extra offered at $7, without buyers, 37 barrels middlings at $4 40; 200 barrels do at $4 70. Two higher grades were not offering.

Wheat.—The market continues very dull, there being too little doing to establish strictly reliable quotations. No improvement can, we think, be looked for until the present season's yield is harvested, and placed in market. At present, however, prices here are higher than in the foreign markets, and it will require considerable time to turn the scale so as to afford a shipping margin Receipts, during the week, 7,577 bushels. Sales, 200 bushels spring at $1 60, 300 bushels at $1 45; 900 bushels at $1 45, 4,900 bushels on p.t., 350 bushels fall wheat at $1 60; 1,000 bushels fall wheat at $1 65.

Peas.—Peas have been in demand during the week with few offering, receipts during the week, 900 bush., sales 400 bush. on p.t. Buyers offering 60c to 61c, and as high as 62c was offered in one case to complete a cargo; 1 car superior sample sold at 66c; selling on the street at from 61c to 62c.

Oats.—The market has been dull, receipts for the week 1,900 bush.; sales, 1,300 bush. at 32c, selling on the street at from 31c to 32c.

Provisions.—The market has been rather brisker during the week In butter the demand is quite active, the market manifesting something of a speculative feeling. Dealers quite generally think prices will be higher. Butter has been selling at from 16c to 17c. Eggs scarce and selling at 11c. A sale of 900 dozen is reported at 10c. Small lots would bring 11c. *Mess Pork* is offered at $23; *Prime Mess* $21 *Bacon* 11c to 11½c. *Cheese*—New factory at 11½c *Lard*—No demand; prices remain nominal at 13½c to 14½c. *Hams* in salt 12½c to 13c, smoked do., 14c to 15c

Wool.—Wool remains steady Receipts during the week have fallen off, but prices remain unchanged. Selling on the street at 37c in bills, 38c in silver.

Salt.—Selling at from 90c to $1 on the wharf.

Hay and Straw.—*Hay* has sold at from $10 to $11, and *Straw* at from $5 to $6.

Freights.—By Steamer—*Flour* to Montreal 20c. *Grain* 6½c to 7c. *Flour* to Kingston 12½c. *Grain* to Prescott 4c to 4½c. *Flour* to Prescott 15c

LATEST CORN EXCHANGE REPORT.

14th July, 1866.

Flour—Receipts 265 bbls; market very dull; sale of 160 bags spring flour at $3 per bag. *Wheat*—Receipts 604 bushels; market dull, and no transactions. *Peas*—Receipts 158 bushels; no sales; selling on the street at 61c to 63c. *Oats*—2400 bushels; sales car-load at 32c f o b. *Wood*—Light receipts, at 37c in bills, 38c in silver. *Provisions*—Butter 16c to 17c. Eggs 9½c to 10c. Other articles unchanged with little doing.

Montreal Markets.—July 13—Laidlaw, Middleton & Company, report—*Flour*—receipts, 40,000 brls; market very dull, only small sales at $6 75 for choice Canada superfine, coarse grades nominal. No transactions in grain. *Ashes*—first pots, $5 40; inferiors, $5 to $5 10; pearls $7. *Butter*, 14c to 17½c.

Galt Markets—*Fall Wheat*, per 100 lbs. $4. *Spring Wheat* do., $3 25. *Fall Wheat*, per bush, $1 50 to $1 60. *Spring Wheat*, do., $1 30 to $1 35. *Barley*, do., 50c to 55c. *Oats*, do., 30c to 32c. *Butter*, per lb 13c to 15c. *Beef*, per 100 lbs., $7. *Pork* per 100 lbs., $6 to $8. *Wool* 37½c to 38½c.

Guelph Markets.—*Fall Wheat*, $1 50 to $1 60, *Spring Wheat*, $1 35 to $1 30, *Oats*, 30c to 31c, *Peas*, 50c to 55c, *Barley*, 48c to 50, *Hides*, per 100 lbs, $5 75; *Beef*, per 100 lbs, $8 to $9; *Pork*, per 100 lbs, $7 to $7 50; *Straw*, per load, $2 50 to $3; *Hay*, per ton, $8 to $8 50, *Wool*, per lb., 39c, *Eggs*, per dozen, 11c to 12c; *Butter*, per lb., 15c to 16c.

London Markets.—July 10—*Fall Wheat*—inferior, $1 30, good to extra, $1 40 to $1 55. *Spring Wheat*, $1 30 to $1 35. *Barley*, 45c. *Peas*, 53c to 55c. *Oats*, 26c to 28c. *Corn*, 60c. *Butter*—prime dairy-packed, 14c per lb, fresh, in rolls, by the basket, 13c to 14c per lb. *Eggs*, 13c to 14c per dozen. *Lard*, 12½c per lb. *Wool*, 35c to 38c per lb.

Milwaukee Markets.—July 13.—Receipts of wheat 45,000 bushels, very dull and sick at $1 86 to $1 87 for No 1, and $1 71 for No 2 f o b, sales at $1 84, in store, at seller's option all month. Flour entirely neglected at $8 50, the highest offer. Freights unchanged.

Chicago Markets.—July 13.—Receipts of wheat, 18,000 bush; dull and nominal at $1 64 and $1 65 to $1 66. Corn steady 60c to 60½c; receipts 220,000 bushels.

New York Markets, July 13.—*Cotton*, dull at 35 to 38c for middling. *Flour*—Receipts, 10,367 barrels. flour dull, and good and choice grades are ten to fifteen cents lower; medium State rules steady, sales 4 500 barrels at $6.25 to $7 85 for superfine state $7 40 to $8 60 for extra state, $8 55 to $10 for choice do, $6 20 to $7 80 for superfine western, $7 60 to $9 65 for common to medium extra western, and $9 50 to $10 for common to good shipping brands extra round hoop Ohio. Canada flour dull, and common grades ten cents lower; sales 250 barrels at $8 90 to $10 20 for common, and $10 25 to $13 65 for good to choice extra. *Wheat*—Receipts 28 200 bushels. Wheat dull and declining for common grades; sales 14,500 bush new No. 1 Milwaukee at $2 25 to $2 30, and 500 bush. new crop amber Jersey at $3 30. *Rye*—Receipts 7 300 bushels. Rye quiet, sales 4,000 bushels Western at 98c. *Barley*—Receipts none Barley dull and nominal. *Corn*—Receipts 222,770 bushels. Corn opened a shade firmer and closed dull, with few sellers at yesterday's prices: sales 160,000 bushels at 85c to 86c for unsound new mixed western; 86½c to 87c for sound do; and 92c for western yellow *Oats*—Receipts 62,500 bushels. Oats 1 cent lower, sales 47,000 bushels, at 51c to 53c for Chicago, and 60c for Milwaukee.

Latest Markets.—Flour closed dull and ten to 15 cents lower for inferior and good to choice grades, and steady for medium Wheat closed dull with free sales at yesterday's prices. Pork closed heavy—new mess, $12 12 Lard closed quiet at 18½c to 21c.

Contents of this Number.

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