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THE

Canadian Agriculturist,

OR

JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

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The Germination of Seeds.

The season is now close at hand when the und has to be prepared for the reception of seed of the various descriptions of spring os. Every farmer or gardener is aware how h depends on bringing the soil into a prop- ilth by ploughing, digging, harrowing, &c., cesses which, if neglected, or imperfectly formed, will be sure to affect the bulk and lity of the crop. A certain depth of friable finely-reduced earth, readily admitting air, mth, and moisture, is as necessary to the wth and development of the cultivated crops re the various ingredients of an organic and ganic nature that constitute plant-food, and ch, if it does not already exist in the soil, t be supplied artificially in the shape of t is well known under the name of manure. resent we propose to consider the earliest e of development in the life of a plant and conditions or agents which affect it, usually gnated *germination*. A cursory view of this esting subject will afford the practical man al useful suggestions, as well as pleasing nce of the wisdom and goodness of crea- nd power.

e growth of the seed consists in the devel- t of the germ into a perfect plant, and is n as *germination*. Supposing the condi- of growth to be favourable, the first pre- ary is a softening of the coat of the seed, ich means water gains an entrance, and pervaded the mass, causes it to swell When the water reaches the germ of the seed, the gluten or albuminous matter near to it undergoes a chemical change, and we have a very important and powerful body formed which is called *diastase*. Whether or not the germ in any way participates in this change, we have no proof; but, if not, it is certain that at least by its presence it exerts a controlling power. The same addition of moisture to any other portion of the seed would not produce the same effect, for this agent (diastase) is only found in close proximity to the germ, and its existence in the seed appears to be simultaneous with the first stage of germination. Upon the diastase thus formed devolves the important office of preparing food for the growth of the germ; for the bulk of the seed, although abundant in quantity, and exactly suitable to its constituent elements, is not ready for use until it has become soluble in water, and thus been made capable of entering into the circularion of the germ. This is accomplished by means the diastase, by the agency of which the necessary supplies are prepared, so long as the store of food in the seed is needed. An immediate extension of the cellular matter accompanies the entrance of the food into the circulation, and we have the external evidence of life by the sprouting of the seed. In whatever position the seed may be placed, the radicles at once strike perpendicularly down into the soil, and the tender rootlets fix themselves there with but little delay. As soon as this is effected, the gemmule grows in the opposite direction, and becomes developed into the stem and leaves of the plant.

The conditions which control the growth of seeds are, the presence of air, moisture, and warmth; and, to produce healthy germination, all are required in definite proportions. When seed is protected from these agencies it will retain its powers of growth for long periods of time. Thus, wheat, preserved in Egyptian mummies between 3000 and 4000 years, has, after the lapse of time, germinated and produced a large increase. The preservation of the power of growth is entirely dependent upon the soil being kept from those agencies which would excite its vital energy,—moisture is the first essential for germination, as it is in consequence of the chemical action excited in the seed by the entrance of water that the seed is aroused to action; and after this process of growth has been excited, if it become checked, it cannot be renewed. This shows the necessity of keeping seeds dry when they are not required to germinate. Moisture alone is not sufficient for the process of growth, as the seed requires a supply of atmospheric air to enable the necessary chemical changes to proceed. Stagnant water in the soil must of necessity be unfavorable to germination, because it renders the land cold, and excludes the free access of air, both of which conditions are prejudicial.

The exceptions to this rule are very few; one, however, may be found amongst agricultural seeds in the floating sweet water-grass (*Glyceria fluitans*), grown in water meadows, in which instance immersion in water is absolutely necessary for the growth of the seed. In this case we have a seed which has the power of extracting its supply of air from water,—a power which very few other seeds possess. The supply of air is as necessary for these aquatic seeds as for any others; for if we drive out the air from water by boiling, they can no longer germinate. For the same reason, seeds which are buried deeply in the earth remain there for many years, not because they want moisture, but because it is unaccompanied by the presence of atmospheric air. The earth raised from wells, or brought from railway cuttings, or ploughed up by a furrow of extra depth, often becomes covered by a growth of vegetation, the produce of seeds which have long been dormant in the soil.

Warmth is another essential condition of germination, which, within moderate limits, is rendered more rapid by an increase of temperature; but it must be accompanied by a proportionate increase of moisture, otherwise it becomes destructive. The action of heat promotes chemical changes in the seed, but a free supply of water is necessary, not only that it may exert a like chemical influence, but also because it enters largely into the most delicate body into which the dry matter of the seed has to be transformed. Thus we see that healthy germination depends upon the combined action of the three agents—heat, water, and air.

The opinions which are entertained respecting the influence of light are conflicting. Some consider that light retards the process of germination, whilst others consider that it does not influence it prejudicially. The experiments which have been made, although far from conclusive, are calculated to favour the former opinion; for the growth, although equally perfect, has not been so rapid under the action of light as when the seed has been covered from it. We know that, as soon as the seed has made sufficient growth to throw out its leaves, the action of light is favourable, its presence enabling the plant to decompose carbonic acid and to retain the carbon for its own, whilst the oxygen is thrown off into the air. But at this earlier stage of existence,—or, in other words, during the period of germination, growth is favoured by an action *just the reverse* of this. The seed and its sprouts want to absorb, not to throw off oxygen, and to exist instead of taking in carbonic acid. During germination, then, the action would tend to paralyze the vital powers of the seed, and limit its growth to the hours of darkness instead of allowing the development to be continuous. Another great advantage gained by covering the seed is the more equable supply of moisture which is preserved beneath the surface, as well as the better opportunity afforded to the roots for firmly fixing themselves in the soil. Those who are practically engaged in conducting the operations of the farm or garden may gain much insight into these interesting but somewhat intricate matters, by frequent and accurate observations, from the sowing of the seed, through all the successive stages of its development to the perfect maturing of the crop, and comparing the results obtained with the principles laid down by the teachings of chemical and physiological science.

Agricultural Hall, Toronto.

This building occupies a plot of ground on he North side of Queen Street, at the corner f Yonge Street, and as it is situated in one of he principal thoroughfares of the city, public rosity may be gratified by a sketch of the esign. We have been favoured with a sight of e plans and elevations, and the following de-ription (drawn up on the supposition that the uilding were completed, which it will shortly e) will be found pretty accurate :—

The front to Yonge Street is 41 feet in length, nd the façade to Queen Street is 82 feet. It ontains on the ground floor—at the angle of e two streets—a substantial and excellent arehouse, for the sale of seeds, plants, &c., ith a smaller store entering from Yonge Street, hich will be rented to a suitable party. The ntrance to the Offices and museum is in the ntre of the Queen Street front, whence a large d roomy staircase leads to the first floor, on ich is the Board room, lighted by two large ndows on the Yonge Street front, Secretary's om, and Porter's room, also a large and com-odious store room, connected with the seed re on the ground floor. The entire of the per floor is in one large apartment., the inter-dimensions of which are 79 feet in length, 38 feet in width. The side walls are 19 feet height from the floor to the top of cornice. e roof is in one span, the framed trusses being ought, having curved wall-braces springing m moulded and carved stone corbels. The ling rises from the side walls at an angle of at twenty-seven degrees, being in the centre feet from the floor to the ceiling. It is di-ed by moulded ribs into panels, with plaster uldings and enriched centre pieces, which ore orated for ventilation. This spacious apart-t is intended as a museum, for agricultural lements, patented inventions, and other arti-connected with agriculture, and open to the lic, free of charge. This it is consider-will be a great boon to farmers and others, rested in the progress of agriculture, where utility and economy of the several imple-ts exhibited may be studied.

he building is constructed in the Italian of architecture. The principal fronts are with the best red pressed bricks, and the ornamental masonry and other dressings are of Ohio stone. The entrance door,—which, as already remarked, is in the centre of the Queen Street front—has rusticated and moulded stone jambs, semi-circular head, with radiating rustics. On either side of the door-way are two windows with semi-circular stone heads. Over the ground floor windows there is a bold belting course, which will be enriched by parti-coloured mosaics, a system of decoration which we believe has never been attempted in this country, although in English and other European cities, it is much used for external and internal decorations. The windows of the first floor rest on moulded sills, with small cast-iron balconies in front of them, the windows having stone jambs and massive cornices. Over these are moulded consoles, supporting the balconies, in front of the upper row of windows, which are finished with handsome stone facings; the whole being surmounted by a bold and enriched cornice, producing an excellent effect. While the general symmetry is well preserved, the disposition of the windows, and the great proportion of solid wall, contribute to give the building a massive character. In this respect alone the design exhibits some novelty and piquancy, particularly in the centre compartment, where the five openings are brought pretty closely together, leaving a large pier on either side of the adjoining opening. Thus the front may be said to be divided into three main compartments, the centre being greater than the other two, which assume the appearance of wings; producing a good architectural contrast, combining solidity and strength—yet without either blankness or heaviness. The plans of the building have been furnished by Mr. Joseph Sheard, architect, under whose superintendence the works are being carried out. The contractors are, for the bricklaying and masonry, Mr. John Platt; and for the joiner and carpenter work, Mr. John Harmer. The painting will be executed by Mr. Alexander Hamilton. The whole expense of the building will not exceed the original estimate of $12,400.

The principal object of the Board in erecting this capacious and commodious building is to secure a permanent office for the transaction of its increasing business; much inconvenience having been hitherto experienced from inadequate accommodation, and frequent removals.—

In the preamble of the Agricultural Statute, 20 Vic,, cap. 32, among the objects which the Board is required to promote, is the establishment in Toronto, of a public Library of reference, comprising both agricultural and horticultural publications, and also a Museum, embracing both those departments of industry. The former has already, to some extent, been accomplished, the nucleus of a library having been formed; but for want of adequate accommodation of a permanent nature, the latter has necessarily been kept in abeyance. It is intended that the capacious Hall set apart for a Museum, shall comprise characteristic specimens of the natural as well as the cultivated productions of Canada; implements and machines, or their models; specimens of soils, and their related rocks and minerals; with whatever can throw light on the agricultural condition and capabilities of the Province. The Board will therefore have to appeal to farmers and others interested in these important objects, (and who is not?) to assist in carrying them to completion. Our agricultural Societies should see that the choice productions of their respective localities are represented in this collection; and horticulturists it is hoped, will follow their example. The firm of James Fleming & Co., will always keep an extensive and reliable assortment of all kinds of agricultural and garden seeds, suitable to this climate; and they intend, we understand, to form a Depot for the various implements and machines belonging to the departments of industry. Numbers will doubtless visit the Agricultural Hall for purposes of business or enquiry, and there can be little doubt that this new enterprise of the Board will be found in its practical working of great general convenience and public advantage.

An Experiment of Wheat Growing in 1766.

In the *Gentleman's Magazine* of May 1770, the following statement appears of the wonderful power of increase which the wheat plant possesses when subjected to extraordinary treatment:—

"In the autumn of 1765 and spring of 1766, Mr. Miller, of Cambridge, produced 2000 ears of wheat from a single grain, by dividing and transplanting it. He repeated his experiment in June, 1766, with yet greater success.

"He sowed on the 2nd of June. some grains of the common red wheat; on the 8th of August he took up a plant and divided it into eight parts, each of which he planted again separately; by the middle of September they pushed out several side shoots, and were again divided into 67 plants; these plants remained through the winter, and were then divided into 500; they soon became stronger than many in the wheat field, and some of them produced 100 ears from a single root. Many of the ears were 7 inches long, and contained between 60 and 70 grains. The whole number of ears produced by this process from a single grain was 21,109, which yielded three pecks and three quarters of grain, and the number of grains being about 576,800.

The Provincial Exhibiton of 1862

The Local Committee for the Provincial Exhibition at Toronto this year have been appointed, and have already held several meetings. The committee consists of the following gentlemen:—

F. W. Jarvis, Esq., Sheriff York and Peel; J. P. Wheler, Esq., Warden, York and Peel; J. G. Bowes, Esq., Mayor of the City of Toronto; Hon. G.W. Allan, President Toronto Horticultural Society; Jas. Beachall, Esq., President Toronto Electoral Division Agricultural Society; The President of the Mechanics' Institute of Toronto; Aldermen Brunel, Lee, Strachan, and Hynes; Professor Croft; Professor Hind; Captain Shaw; Arch. Boyd, Esq., Markham; J. P. Bull, Esq., Yorkville; together with all the members of the Board of Agriculture, *ex-officio*. Chairman of the committee, Hon. G. W. Allan; Secretary and Treasurer, Wm. Edwards, Esq. The committee have commenced work energetically, and we hope that those on whom the exhibition must mainly depend for the material elements of success, we mean the producers of the country, the stock breeders, farmers, gardeners, mechanics and artizans, will not be behind hand in their preparations to carry out their part of the programme. The Prize list will be published as early in the season as possible, but in the meantime the lists of previous years will serve very well as a guide. The subjoined letter from

Denison, who is on the committee as a member of the Board of Agriculture, will give some idea of the preparations the Local Committee propose making.

PROVINCIAL AGRICULTURAL ASSOCIATION.

TORONTO LOCAL COMMITTEE.

Editors of Agriculturist,

Farmers who intend to exhibit at the Provincial Agricultural Show this autumn at Toronto will be glad to learn, that extensive preparations are being made, to accommodate stock, far beyond any ever before prepared at such exhibitions in this country.

1. *Horse Stables.*—Four buildings to be erected in the form of a quadrangle, each building to be 130 feet by 30 feet, and 12 feet high, and divided into double and single stalls. Doors well hinged and furnished with hasped staples,—exhibiters to furnish their own locks. These stables are to be permanent and well lighted and ventilated, and are to be built with the view of accommodating cavalry and artillery in case of necessity.

2. *Cattle Stables* are to be also four in number, 150 feet by 30 feet and eight feet alls. These buildings are to have an eight oot passage through the centre which will eave the stalls 11 feet deep on each side, he outer walls and partitions are to be only 3 eet 6 inches high—the walk down the centre o be raised 2 feet to give a commanding iew over the stock. These stable are calcuated to hold 26 Durham bulls, 20 Down bulls, 2 Ayrshire bulls, 12 Galloway bulls, and Hereford, 60 Durham cows and heifers, 50 evon, 30 Ayrshire, 30 Gallo way, 20 Hereford, ltogether 265 stalls. This building also to e permanent.

3. *Sheep Folds.*—A building 900 feet long, 2 wide, and 7 high, divided into 150 pens, accommodate 600 sheep, the whole to be overed and partitioned 3 feet high, with ovable bars in front, to put the sheep in or ke out.

4. *Pig-Pens.*—This building is to be cov- ed and divided into 150 pens 6 feet square, culated to hold 300 pigs.

5. *Poultry.*—This shed is to be 100 feet ng and 12 wide, and the walls are to be 7 t high, open all around, and to be furnish- with two rows of coops down the centre, d three coops high, with lattice fronts, and nished with doors.

6. *Machine Shed.*—This building is to be 6 feet long, 32 feet wide, and 12 high, good gle roof, and strongly framed, to stand on ar posts without sills, to be open and ac- ible on all sides, and fitted up with a line of shafting at least 50 feet long, and to be a permanent building.

7. *Forage Barn.*—To contain hay and straw, and fitted with bins for bran and oats, and to be convenient to the other buildings.

8. *Hurdles.*—There will be in addition to this accommodation, sufficient hurdles on the ground to make a hundred pens if required.

It is intended by the local committee, if not by the Corporation, to enclose 8 or 10 acres of land more than we had under fence at the last Exhibition in Toronto. This of course will afford ample room for every purpose, and make the show ground a more convenient shape than before.

Before closing I would advise all friends of the Agricultural Association who have suggestions to offer with regard to the prize list for the current year, to do so at once, before the prize list committee set to work to revise. These suggestions should be forwarded to the Secretary of the Board of Agriculture, Toronto.

It is much to be desired that we have a good show this year. The country never was so full of good stock before, and prosperity is fast returning; indeed we were never in a better position to get up a good show than now. The location is central and accessible, having Rail Roads and Steamers in all directions, the heart of an old settled country, well filled with good stock and good farmers, and nothing can prove a good farmer better than giving a hearty support to our own peculiar Institution, the Provincial Agricultural Association of Upper Canada.

I think I need not apologise for the length of this letter, for the information will be gladly received by your readers.

Yours truly,

RICHARD L. DENISON.

Dover Court, Toronto, Feb. 1862.

Maple Sugar.

This is the season for making maple sugar; and this industrial product is of considerable importance in some sections of the country, and might be made of much more value if due attention were paid to the processes of manufacturing and refining. A really excellent and highly palatable description of sugar, almost as white as the best loaf, may be made from the sap of the maple, by the exercise of proper skill and care in these particulars. The following article on "Clarifying," one of a series on the "Importance and best mode of manufacturing maple sugar,"

written by Hon. S. F. Perley, of the State of Maine, for the *Maine Farmer*, will be found to contain some useful suggestions:—

CLARIFYING.

When the sediment has well settled, draw off carefully, by a faucet, all the clear syrup from the "settling tub;" leaving the residuum to be diluted with sap, which reduces its specific gravity, when the sediment will be more thoroughly precipitated, and the clear sap, after a few hours, can be drawn off and returned to the boilers, to be included in the next batch; thus making a saving of nearly all the sweet, and rejecting the dirt. The clear syrup may be now poured into the graining kettle; and to a quantity of syrup which will make sixty pounds of sugar, add about one quart of skimmed milk for a clarifier, and thoroughly intermix the two by stirring. The white of eggs well beaten, bullock's blood diluted with water, and other albuminous substances may be used for clarifying; but upon the farm, milk is most easily obtained, is the cheapest, and best. Skimmed milk, if sweet, is equally as good as new milk; for it is the casein, or curd, acting mechanically by entangling the fine particles of dirt, which the former strainings have not removed, that give it its value as a clarifier. Now place the graining kettle with its contents over a slow fire, and gradually heat the syrup to near the boiling point. This curdles the milk, and as the curd forms it embraces the impurities still remaining; and the curd, by the increasing heat, becomes specifically lighter than the syrup, and eventually floats upon the surface in a thick, somewhat tenacious scum. Care should now be exercised to prevent ebullition, as that would break up the sum, and the action of boiling would carry much of it down to be again mingled with the mass. Now swing it from the fire, and allow it to remain undisturbed an hour, more or less; during which time a great part of the feculencies will attract each other and rise with the scum. The scum is to be carefully removed with a fine skimmer; to draw the syrup from beneath the scum with a syphon, or stop-cock, would be a better way, for then there would be no disturbance, as in the case of using the skimmer; but this would be attended with some inconvenience and expense. Here, again, economy demands that the scum, which has so much sweet in it, should not be cast away; but be placed in a tub and diluted with sap, the allow it to settle a few hours; after which, the sap, much sweetened by the process, may be poured off and returned to the boilers. It is found by considerable experience, that, with the utmost care, the curd and dirt cannot be entirely removed by the skimmer; consequently, resort must be again had to the flannel strainer. This last straining is usually omitted by sugar-makers, but it is quite important, if a clean, pure, sugar is wanted. A still better process would be to filter the syrup through animal charcoal, (bone black,) as is done in cane sugar refining; for by this process not only the dirt, but all coloring matter, would be removed, which would greatly improve the appearance of the sugar. Bone black, however, cannot be readily obtained in country towns; and the expense and trouble in procuring and using it would hardly be compensated where only a small business is carried on, as is the case in most of the sugar orchards in Maine. If any one desires to experiment in this direction, a filter made of finely pulverized and thoroughly washed wood charcoal will serve as an imperfect substitute for one made of bone black. So late as 1811, wood charcoal was exclusively used in refining syrups; at which time the superior quality of animal charcoal was discovered, and the former soon went out of use. But, by the use of the milk clarifier and the flannel strainer, a very fair sugar for home use can be made; and the ease with which these articles can be procured, and the simplicity of this process of manufacture, commend this method for general adoption.

The first boiling or "turning off," as it is termed, is simply reducing the thin syrup, by boiling, until it is of suitable consistence to be used as a table syrup, like that from refineries; or until it will granulate in sugar. No uniform rule for the consistency of syrup prevails; each maker adopts a standard to suit his own private taste; or else, taking counsel of his cupidity, he refrains from reducing it to a rich, honest, heavy syrup, so that he may have the greater number of gallons to market. Accordingly, much of that offered for sale will pour like water, when it should have the weight and consistency of good W. I. molasses. It should be reduced almost to the graining point, which can only be determined by cooling a small quantity in a saucer or other vessel, and testing it by sight and taste. A first quality syrup will grain a little after straining a few weeks.

To produce sugar, still further boiling is necessary, and the precise point at which the boiling should cease is an item of experience, more easily recognized in practice than described. Several tests are relied upon, some of which are as follows: 1st, where the steam forcing its way up through the foaming mass, on reaching the surface, escapes by bursting its bubble with a slight explosion, similar to that observed upon hasty pudding when nearly cooked: 2d, when a small quantity, say a table spoonful, taken from the kettle and poured hot, upon a compacted snowbank, after melting the snow a little, will lay up-

3d, when a drop taken hot from the kettle, on being let fall from the edge of the skimmer or spoon into one inch of cold water will pass directly through the water without mingling with it, and rest upon the bottom in the form of a flattened hemisphere: 4th, when a drop taken upon the finger on being touched by the thumb will draw out a thread from one-fourth to one-half an inch long: and 5th, when a small quantity taken into a saucer or spoon, and thoroughly cooled, will granulate, so that it can be detected by the eye, the taste, or when crushed between the teeth; then it may be removed from the fire for "it is done." These tests, particularly the 3rd and 5th, are useful to beginners as aids in forming a correct judgment; but one long practised in the business seems, intuitively, to recognize the time when the grain will form, and the boiling should cease.

The liquid sugar may now be "turned off" into vessels to cool and granulate. If a fine grain is desired, rapid cooling in shallow pans, with rapid stirring while the crystals are forming will produce the result. If coarse sharp crystals are preferred, leave it undisturbed, in larger quantities until the crystalization is completed. There will be a portion which will not granulate, but will remain as dark coloured molasses filling all the spaces between the crystals of sugar. The quantity of this varies with the season, being greatest near the close; and varies somewhat in different seasons, owing probably to the varying quality of the sap, and the skill used in the process of manufacture.

To obtain a dry sugar, after the granulation is completed, throw the whole into a tub or barrel, prepared for the purpose by boring the bottom with several holes, these holes to be closed until the crystals are well compacted together, say one or two weeks; then remove the plugs and allow the molasses to drain away. The draining will be more perfect, and consequently the sugar of lighter colour, if a wet cloth is spread upon the surface of the sugar, and renewed daily until the draining is completed. The moisture from the cloth, gradually settling down into the sugar, dilutes the molasses, rendering it more liquid, and of course it passes away more thoroughly. A little of the sugar becomes dissolved and carried away by the descending water, but this is not lost, as it mingles with, and becomes a part of a very good molasses. The draining should be done in a warm room, for cold also renders the molasses more liquid and the draining more perfect.

Instead of barrels or tubs with perforated bottoms, inverted pyramidal, or hopper-shaped boxes are sometimes used in draining. These boxes may be 12 or 15 inches square at the top, by two inches square and open at the bottom, and three feet long; with a hole at the smaller end for the escape of the molasses; to be suspended like a hopper. These are better than those barrels, for the reason that the quantity of sugar near the bottom, where the drainage is always imperfect, is comparatively small.

Thus we have a crude sugar equal in every respect to the corresponding grade of cane sugar; and superior to it in this, that we know it has been prepared under circumstances far more favourable to cleanliness than exists on Southern plantations, where the operators are driven to their tasks, and care only to avoid the dreaded lash.

It was my intention to offer some suggestions upon the subject of refining, a branch wholly distinct from the manufacture of crude sugar; but the undue length to which the subject has already extended leads me to forbear a further trespass upon your columns. I stop here the more willingly from the fact that the further process of refining, adds nothing to the real value of the sugar, but rather the reverse; for by it weight, and the peculiar maple flavour are, in a measure, sacrificed for an improvement in colour.

Osier Willow.

To H. C. Thomson, Esq.,

Secretary, Board of Agriculture.

Dear Sir,—The following paper on the culture and management of the "Osier Willow" has been reprinted in England from the *Rural New Yorker*. It is a subject which every common farmer may easily understand, and there are hundreds of places in Canada well adapted for planting the Osier Willow with success and profit; therefore, without further preface, the following is a copy of the printed paper:—

"Having lately seen several inquiries respecting the Osier Willow and its culture, and being asked almost daily, 'Do you think it will pay?' I have concluded to send you my experience in its cultivation. Three years ago this spring after corn-planting, I set two acres of the French Osiers, placing them in rows three feet apart, at a distance of one foot from each other; the first year I cultivated and hoed the same as corn, and many of the shoots attained the height of four feet. The next spring I cut them, but having no machine for peeling lost the crop, except a few used for sets. Last spring I cut, and commenced peeling by hand, which I found rather an up hill business, and almost resolved to abandon their culture if they must be peeled in this way. About this time a machine was invented for peeling willows. I immediately procured one, which worked to my entire satisfaction, and with it finished peeling my crop, which when ready for market, in-

cluding some sold for sets, a little exceeded a ton. These I shipped to a Commission Agent in New York, and received for them $110 per ton. This year I have a much heavier crop.—For an experiment I have weighed those cut from 12 stools, which amount to 18 lbs. I have found in peeling and drying they waste nearly one half. The produce of an acre stands thus: 14,520 stools per acre ½lb. each, 21,780 lbs.—Ready for market, 5½ tons, $110 per ton, $605, cost of cutting per acre, $6; cost of peeling per ton, $7, $38, binding and taking to market, $5½ per ton, $27, total, $72. Deducting expenses, this leaves a profit per acre of $533."

"According to directions at the time I planted, I have not cultivated mine since the first year, but think they should be cultivated once every spring, to loosen the soil and keep them free from weeds and grass. I am confident that any one who has suitable ground and will bestow proper cultivation can realize this amount from an acre of willows, perhaps more. After reading these facts I think no one can hesitate to answer the query, will it pay?"

The foregoing computation shews a liberal profit on the experiment. Is it not worthy the consideratson of the Board of Agriculture to offer a scale of prizes for the encouragement of the cultivation of the Osier Willow? The season for planting being very convenient, about the same time of planting Indian corn, there is scarcely a farm in Upper Canada without a low swampy plot, which, with open drains, may easily be made fit for its successful cultivation.

The premium should not be less than for one acre, the cultivation to be certified by the President of the County Agricultural Society, wherein the plantation is situated.

Your obedient servant,

J. B. MARKS.

Bath, England, Feb. 1862.

Experiments on Manures.

A short time ago some experiments were published in the *Gardeners' Chronicle* in reference to the beneficial action of coprolites (ground to an impalpable powder) on swedes, in comparison with other manures. The results have, contrary to the opinions of myself and others, induced me to try similar experiments on swedes, the result of which I now lay before your readers. I quite agree with Dr. Voelcker in saying that very little good can be obtained from the result of a single experiment, but often a great deal of harm; and with this view of the case, I intend pursuing the same experiments for several years to come, as I think it is the duty of every one who holds a similar position to myself to do all in their power to connect science with agriculture, and I shall be very glad to join any person in making agricultural experiments who is situated in a different part of England, so as to be able to arrive at more satisfactory conclusions.

The ground experimented on was lately a very old and badly drained piece of pasture to which after being well drained, salt was applied at the rate of 25 bushels per acre. The field was then ploughed and harrowed in the usual manner, and divided into two parts of 4½ acres each. On the one half oats were sown, and on the other mangels and swedes drilled in with superphosphate of lime leaving the width of one drill across the field unmanured. Out of this one drill was divided into plots side by side, measuring 4 by 3 yards, each containing eight drills. The plots were manured and sown on the 13th May, 1861, as follows:—

	Cwt. per acre.		per ton.			
No. 1. Bonedust at the rate of 2½ at £8			0	equal to	£1	0
2. Ground coprolites	5	"	4	0	"	1	0
3. Unmanured.							
4. Ground bone-ash	4	"	5	0	"	1	0
5. Superphosphate, ETK's	3	"	6	10	"	0	19
6. Dissolved coprolites	3	"	6	10	"	1	19

The soil was in a fine state of division, the weather dry, and the manures in a finely powdered state, and well mixed with ground ashes before being drilled in with the seed. On the 18th inst. the seed had all appeared above ground and very regular. On June 3rd the plants in each plot were looking well, but those in No. 1 were decidedly the most forward, and those in No. 3 the most backward. Plots 5 and 6 appeared equal throughout the season, and all were treated in the ordinary manner. The amount of phosphate of lime per cent. in the manures used were as follows:—

In No. 1. Bone dust, 55.35 per cent. phosphate of lime.
" 2. Coprolites, from 60 to 61 per cent. do.
" 3.
" 4. Bone ash, 67 per cent. do.
" 5. Superphosphate, 18.59 soluble and 2.40 insoluble } 21.03 total.
" 6. Dissolved coprolites, 21.75 soluble, and 10.35 insoluble, } 32.10 total.

On looking at the above we find that

cwt.		lbs.		
2½	of bone dust per acre is equal to	165	of phosphate of lime.
5	of ground coprolites	336	" "
4	of bone ash	300	" "
3	of superphosphate	70½	(mostly soluble)
3	of dissolved coprolites	77¼	" "

Thus showing the preponderance of insoluble phosphates in Nos. 1, 2, and 3, or the natural manures. All the plants are a great deal more green, and were attacked by mildew just before being pulled and cleaned on the 12th of October. The number and weight of the roots in each plot, with the weight per acre, was as follows:

Plots.	Manure used.	Rate per acre.	Weight of roots in plot.	Number of roots in plot.	Average per acre.
		Cwt.	lbs.		Tons.
1	Bone dust	2½	114	60	20
2	Coprolites ground to an impalpable powder	5	112	54	20
3	Unmanured		102	51	18
4	Bone ash	4	123	52	21
5	Superphosphate	3	124	58	21
6	Dissolved coprolites	3	132	56	23
	Average		118	55	

From the above statement it will be plain

een that the swedes were most benefitted by
he manure which contained the largest amount
f phosphate of lime rendered soluble by means
f sulphuric acid, although the total amount of
one earth (insoluble phosphates) was less in
os. 5 and 6 than in Nos. 1 2, and 3, more
pecially in No. 2. The whole of these ex-
eriments were superintended by myself with
very possible care, so as to avoid any error.
he greatest objection to the above experiment
as the small quantity of ground experimented
n; therefore next season I intend allotting one-
ighth of an acre to each experiment. In con-
usion. I may mention that the season was
enerally fine, not much rain having fallen until
fter the roots were about two-thirds grown.—
. T. KENSINGTON, F. C. S.—*Gardener's Chronicle.*

Insects the Past Year.

The following letter of Dr. Fitch to the
irectors of the New York State Agricultural
ociety, and published in the last number of
eir monthly journal, will be found to contain
uch useful and interesting matter.—EDS.]

Gentlemen:—The past year has furnished an
nusual amount of important material for inves-
gation in the department in which I am occu-
ed. And I had contemplated with much satis-
ction, the account of the year's researches
hich I should have to present in this address
the annual meeting. I will endeavour to
stily sketch the leading topics I had in-
ded to speak of, and if you deem this will
of any interest to the meeting, it may be
d as some amends for my non-appearance.
The insects with which my attention was
ost occupied the past year, were the grain
his, the army worm and the wheat midge.—
d I will aim to notice some of the more im-
tant facts that have been thus come to with
pect to these insects.
The first of these. the grain aphis, made its
ent in a most remarkable manner. That an
ect never seen before and not known to be
sent in our country should suddenly be found
erywhere in New England and most of the
te of New York, in profuse numbers in every
in field of this wide extent of territory, and
rally swarming upon and smothering the
p in many fields, was a phenomenon which
obably has no parallel in the annals of science.
w it was possible for this insect so suddenly
become thus astonishingly numerous. was a
stery which seemed to most persons to be
xplicable. It is the most prolific of any
ect which has ever been observed. I find it
mmences bearing when it is but three days
and produces four young daily. Thus the
scendants of a single aphis will in twenty days
ount to upwards of two millions, each day
increasing their number to almost double what
they were the day before. This serves to ac-
count for the surprising numbers which we had
of this insect.

The aphis was everywhere supposed to be a
new insect, and one writer went so far as to
name and describe it scientifically, in full confi-
dence that the world had never before known
anything like it. My examinations, however,
fully assured me that it was identical with a
species which has long been known in the grain
fields of Europe And on my announcing this,
the erroneous views which one and another were
adopting, were speedily abandoned.

Our best Europen accounts of this insect,
however, are very imperfect. They only speak
of it as occurring in June and July, whereas I
find it is present on the grain the whole year
round. And when the grain is but a few inches
high, if half a dozen of these insects happen to
locate themselves on the same plant, they suck
out its juice to such an extent that the plant
withers and dies.

As yet I have never been able to find a male
of this species. They are all females. This is
proved by placing any one supposed to be a
male in a vial; next morning too or three young
lice are always found in the vial with it. The
general habits of insects of this kind are well
known. The aphis on the apple and other fruit
trees, when cold weather arrives, give birth to
males. The sexes then pair, and the female
thereupon deposits eggs, which remain through
the winter to start these insects again in the
following year. I had supposed it would be the
same with this aphis on the grain. I thought,
when autumn arrived, I should meet with males
and find eggs dropped on the blades of the grain.
But there were none. The females and their
young continued to appear on the grain till the
end of the season. They are everywhere on the
grain now, buried under the snow, ready to
warm into life and activity again when the
spring opens. And on grain growing in flower
pots, on which I am keeping these insects in
full activity through the winter to notice what I
can of their habit, no males have yet appeared.
When, and under what circumstances this sex
will be produced, is a most curious subject, still
remaining to be ascertained. It at present looks
as though the female and their descendants were
prolific permanently, without any intercourse of
the sexes.

Last summer, such multitudes of parasites,
lady-bugs and other destroyers of this aphis, had
become gathered in the grain fields at harvest
time, that it seemed as though it would be ex-
terminated by them. But at the end of the
season, this insect appeared as common on
young rye as I had noticed it at the opening of
spring. The present indications, therefore, are
that this aphis will be as numerous on the grain
the coming summer as it was the past, if the
season proves favourable to its increase.

As to the *army worm*, it may be remarked that for almost a century it had been known that in this country was a kind of worm whose habit it was to suddenly appear in particular spots in such immense numbers as to wholly consume the herbage over an extent frequently of several miles, and then abruptly vanish, nothing being seen of it afterwards. Thus it was one of the most singular and almost one of the most formidable and alarming creatures of this class that was known to be in the world. Yet, what kind of worm this was, and what insect produced it, remained wholly unknown down to the present day. Appearing here and there all over the country, the past season, this army worm became the object of the deepest interest; and from Illinois on the one hand and Massachusetts on the other, specimens of the moths bred from these worms were sent to me, for information as to what the name of this insect really was. To these inquiries I was able to give an answer so full and explicit that there has been a general acquiescence in the correctness of my decision on this subject.

With regard to the *wheat midge*, I would observe that, in a lecture before the Society a few years since, I stated that in this country injurious insects were much more numerous than in Europe, occasioning us far greater losses than are there experienced. I was assured of this fact from carefully comparing the statements of foreign authors respecting the depredations of particular insects, with what we know of the same insects here. But I did not suppose it would be possible to show by any more decisive proof that the facts were as I stated. A year ago, however, I received from France a vial filled with insects as they were promiscuously gathered by the net in the wheat fields of a district where the midge was doing much injury. It then occurred to me that, by gathering the insects of our wheat fields here in the same manner, it would furnish materials for a very accurate comparison of the wheat insects of this country with those of Europe. As the result of a comparison thus made, I find that in our wheat fields hear, the midge formed 59 per cent. of all the insects on this grain, the past summer; whilst in France, the preceding summer only 7 per cent. of the insects on wheat were of this species. In France, the parasitic destroyers of the midge amounted to 85 per cent.; while in this country, our parasites form only 10 per cent. And after the full investigation of the subject which I have now made, I can state this fact with confidence—we have no parasites in this country that destroy the wheat midge. The insect so common on wheat, and which resembles the European parasites of the midge so closely that, in the New York Natural History, it is described as being one of that species, and in the Ohio Agricultural Reports it is confidently set down as another of them,—I find has nothing to do with the wheat midge, but is the parasite of an ash gray bug which is common on grain and grass, laying its eggs in the eggs of this bug, and thus destroying them.

In my lecture a year ago, I stated to the Society that the wheat midge had wholly vanished the previous summer; not one of its larvæ could I find, on a careful search over an extensive district around me. But the past season this insect appeared in the wheat again, as numerous as usual. This has led us into important changes in our views of the habits of this insect. How was it possible for it to utterly disappear from the wheat one year, and be back in it in swarms the next year? Obviously it must have other places of breeding than in the wheat. And, therefore, if no wheat was grown in this country for a few years, as has often been proposed, it would not starve and kill out this insect. The insect would resort to these other situations, and would sustain itself there, returning into the wheat again as numerous as before, when its cultivation was recommenced. And what could it be that banished this insect from the wheat in 1860, and brought it back again in 1861? *The remarkable difference in the weather* of these two years furnishes an answer to this question. When the midge fly came out to deposit its eggs in June, 1860, the weather was excessively dry; in 1861, it was very wet and showery. And thus we learn the fact that these flies cannot breathe a dry, warm atmosphere; they are forced to retreat to places where the air is damp and moist. When the uplands, the plowed fields, are parched with drouth, the midge cannot abide in them; it must go to the lowlands along the margins of the streams, where it must remain so long as the drouth continues. Here it must lay its eggs and rear its young, depositing them probably in the grass growing in these situations. And hence we also learn that if the last half of June is unusually dry, our wheat that year will escape injury from the midge: but if the last half of June is very wet and showery, this crop will be severely devastated. Time forbids my pursuing this subject further.

Yours truly,

ASA FITCH.

(From the Mark Lane Express.)

Experiments on the Potato Disease.

So multifarious and vague have been the notions of this widely-spreading disease, that it has now become almost habitual, especially in rural districts, to regard a solution of its supposed vagaries as hopeless, and a moderation of its active progress as an absolute impracticability. Now, however, that it has assumed so considerable an importance in a social, moral, medical, economical, and even political point of view, we are impressed with the desirability of directing the results of a series of investigations on the nature of the disease, the laws it observes, a

the modification of which it, at present, admits. Some 14 or 15 years have elapsed since this intractable disease was by some ill-fated importation brought to our flourishing crops, and from one or more as yet unascertained focuses, swept over this and the sister-isle, dealing uneasiness and sorrow to every abode, from the princely hall to the hutch of the beggar. Speculations innumerable have spent their influence in complicating the matter, and in disheartening many a noble aspirant in the cause; but soon, we hope, we shall be able so to simplify (by accumulation of facts and well authorised inferences) its presumed abstrusities as to render its leading features encouragingly familiar to all. System is essential to the success of the least complex of investigations, and remindful thereof, must the twin sisters Theory and Practice co-operate, otherwise the inductions of the one will be nullified by the more tangible evidence of the other, and all their essays end in irrespondence and confusion; and, with the latter views at heart, we have been actuated, through a series of years, to an attentive study of the potato disease, and are well satisfied ourselves (as botanists have before) that it consists of a fungus, and for the following reasons:—

1st. There exists, without exception, on every diseased leaf, a parasitic fungus, visible as a light mould, to the unaided eye, and forming a beautiful microscopic object.

2nd. The same fungus is discoverable in the diseased tubers, and in the soil contiguous to the pot on which the latter rotted.

3rd. A like fungus has, we believe, never yet been demonstrated on the healthy haulm, or tubers.

4th. This fungus, when carefully removed from the diseased leaf, and transferred to the substance of the healthy tuber, will (in from four to eight days) *cæteris paribus*, originate the specific disease therein at the point of inoculation.

5th. With this fungus in your hand you may infect the haulm of a flourishing crop at pleasure.

6th. All remedies, of any practical value in checking the disease, are reconcilable with its fungoid origin.

7th. All the so-called vagaries of the disease, resulting in its attacking one and not another crop, one part in preference to another of the same bed, now spreading slowly and again rapidly, or even leaving your crop comparatively intact, are readily explained by the laws which regulate fungoid development, and referable to the active or passive migration of the seeds of the fungus (botanical spores) being interfered with by local peculiarities of site; or to their germination being checked or permanently arrested by atmospheric or telluric agencies of limited operation. To popularize a fungus, what is it? A vegetable of the humblest structure, "a miniature mushroom," that in every instance springs from a parent fungus, often leading an independent existence and obtaining a considerable magnitude, as the meadow mushroom, puff-ball, &c., &c.; but, so disposed to play the parasite, that nearly "every earthly thing" is infested with its fungus; a few—to wit, the human teeth, tongue, throat, and respiratory organs, the "wounds of living men," the helpless caterpillar—may have all organic structure transformed to an exuberant fungus; the wheat, barley, and other cereal crops may be annihilated by their respective funguses; and the mellowing of fruits, their last chemico-vital process, is one preparatory to their decay by the fungus. A fungus differs from all other vegetable structures, in having nearly the whole of its substance composed of reproductive matter, and in effecting its generation by means of minute variously-shaped and tinted bodies, called spores, and which differ from seeds in possessing the capacity of germination from any part of their circumference to which favorable co-existence of heat, air, and moisture, may be presented; whereas a seed can only germinate from one constant point.

We will now pass in brief review the several plans that have been proposed, and had their value tested, for the prevention of the potato disease, viz., the following:—

The method of Mr. Hardy.
do. the C. of Hornsey.
do. The Russian Professor.
do. Mr. Short.
Own methods.

Mr. Hardy's plan is pretty well known in the south of England, and has for its object the destruction of a presumed (but by him undemonstrated) fungus. The tubers are planted in the usual way, or what is best, in ridges, and as soon as the disease appears in the leaves, the haulm is turned down and so retained. Mr. Hardy believed that by so placing the stems you would favour their ablution from the fungus by the rains, and that the parasite, falling on the ground, would, from lack of its wanted ground to play upon, ignominiously perish. The spores alone are washed off by the rains, not the fungus bodily. Potatoes cultivated on the Hardy principle become affected in their stem equally soon as the most neglected; but the tubers suffer, as a rule, numerically less, and, occasionally, considerably less than those uninterfered with. The average proportion of diseased to sound, which we have repeatedly observed, was one of the former to seven of the latter.

The C. of Hornsey aspirant turns the haulm right and left, and places a little soil over the roots, believing that he does, thereby, exclude the rains, and so preserve the tubers from infection; the true explanation of the preserving influence of his plan is found in the fact of the majority of the spores (when put in motion by their own or extraneous force) having in conse-

quence of the horizontal direction of the stems, a greater chance of falling on the bare soil and perishing, than of descending to and about the tubers. This method, when modified by planting the tubers in raised beds as hereafter described, gives most satisfactory results, the tubers being fine, full flavored, and diseased in the ratio of from one in fifteen to one in fifty.

The Russian Professor's principle resolves itself into the conviction of the existence of the disease-generating agent on, in, or about the seed-tubers, and the remedy thereby suggested seemed plausible enough; it was to effect its destruction by artificial heat; viz., by drying the seed tubers in ovens until they were shrunken and wrinkled to almost apparent destruction. Potatoes so treated grew in the ratio of 66 per cent.; their stems were, as a rule, weak, and became infected as soon as any other; whilst the tubers, moderately sound at the getting-up, apidly rotted at the proportion of 60 per cent.

Mr. Short offered to the public a remedy which, at first sight, seemed to be the most feasible, and of the greatest avail, of any heretofore proposed; it was given as original, and, as far as he was concerned, probably was so; but it had been previously carried out in principle by ourselves, and stigmatized as scarcely worthy of comment. It consists in planting the tubers in ridges; the former six inches apart, the latter thirty; and as soon as the disease is unequivocally established in the haulm or tuber, in turning down the stems, and covering them with six inches thickness of soil. Now such a plan is, *in limine*, laborious, expensive, almost impracticable in some gardens, from scarcity of soil, and, practically, of scarcely any worth, even when all the skill and patience of the most liberal experimenters are thereon bestowed; for if you cover the haulm on the first appearance of the disease in the leaves, you do it at a time when the young tubers are no larger than marbles, or to be more precise, from $\frac{1}{4}$ to $\frac{3}{4}$ of an inch in diameter, and though they are absolutely sound, they are of no culinary usefulness; again, if you wait till the disease has advanced further down the stem, till the tubers are tolerably fine, and only just tinted, here and there, with the disease, you find the great heat and moisture evolved by the decaying stems and the fungus thereto adherent, so to favour the spread of the disease, that in one week the number of diseased would reach 1 in 10, and go on rapidly increasing till your potatoes would be diseased in the proportion of 1 to 6. Moreover when the haulm is covered with earth, all true ripening processes at once cease, and Mr. Short was premature in his remarks on the quality of the tubers grown by his method, as they always are, and must necessarily be, smaller, closer, and less flavourous when cooked, than the typically perfect tuber, but comparatively good when the generally inferior quality of the potato crop is considered.

Own Methods.—No. 1. When the haulm is diseased about half way down, cut it off close to the ground, rake the soil over the lower portions of the stems, and leave them in the ground one month; this plan is simple, inexpensive, and gives in most seasons a very fair result, *e. g.*, in the best of our yields only three, in another only ten per cent. were diseased; the potatoes, in all cases, were of good size, fairly mealy when cooked, and kept remarkably well.

No. 2. Plant the seed tubers in ridges, and when the disease appears in the haulm turn it right and left, as in the Hornsey method, and place a little earth over the roots; then proceed as in the previous (own method No. 1) and you will still have better results.

No. 3. Decidedly the best method hitherto made public, but one unfortunately almost too tedious and expensive to be carried out except for experiment, or in those gardens in which no expense is of so much consequence as an abundant crop of fine sound potatoes, is the following:—Manure your land in autumn, ridge it afresh on some mild day in the winter, and at the planting season raise therewith a series of beds or ridges 30 inches distant from each other, as high as half of the intermediate soil on each side will admit of, and pointing northeast and south-west; in these let a trench be made eight inches deep, therein the seed tubers placed six inches apart, and the whole covered with soil as fine and light as procurable. (We find the best time for planting potatoes, to be treated on this plan, to be from the middle of March to the 10th or 12th of April); after the haulm is well up rake the soil up each side of the ridge to the stems, once or twice a month, and when the disease appears, carefully watch its progress, and when the disease appears, carefully watch its progress, and as soon as the main stem is affected, strip off all the leaves and the diseased part of the main stem, carrying them carefully away, and deeply bury them, leaving the defoliated stems to desiccate, or to throw out fresh leaves for one month. On a fine dry day get up the tubers, remove all superfluous dirt therefrom, and when perfectly dry, stow them away for spring use, resting assured that all you find rotten in the spring were tainted and overlooked at the harvest; this method gave in one instance only one, and in another only two and a half per cent. diseased, in both of which cases the tubers were fine, of excellent quality, and kept perfectly sound.

From the ...d other similar investigations we may make the following general observations:—

No. 1. The fungus, as a rule, first attacks the stems (but not necessarily so), and then descends to the tubers.

No. 2. The extirpation of the disease from our island is an *impossibility*, except by a universal concurrence and through a series of years of preventive measures.

No. 3. Every sort of potato will, under favourable relations, suffer; but, as a rule, the thicker the skin the less prone is the tuber to offer a timely nidus to the spores.

No. 4. Potatoes grown on virgin soil, whether left to their fate or not, will be, numerically, less diseased than those grown on beds that have been, previously, continuously cropped.

No. 5. Land that has lain turf, waste, or corpse, for, at the fewest, 30 years, will not grow potatos proof against the disease—one of the worst crops we ever saw grew on soil that had lain undisturbed turf for 30 years.

No. 6. Diseased stems and tubers should be carried out of the garden, and either buried or burnt.

No. 7. No compost or stytic dressing, *e. g.*, lime, tan, vitriol, or artificial manures, employed in a proportion compatible with luxuriance of growth, will impart to the soil the property of preserving the tubers from infection.

No. 8. Warm, humid weather, with gentle breeze blowing from a variable point, is favourable to the invasion and rapid progress of the disease; whilst cold, dry weather immediately gives an obvious, but usually temporary check, to its advance.

No. 9. Manure used at the time of planting will exert no influence in determining the invasion of the disease in either stem or tuber, but appears slightly to increase its activity after it has declared itself in the tubers.

No. 10. Soils which are well exposed, light, dry, and rich in character, are those that predispose least to the spread of the disease in the tubers; whilst wet soils, especially if shaded, render them much more amenable to its influence.

No. 11. In the present state of science no one can venture to aim at, or propose, an infallible remedy; the best we dare aspire to is to stay the disease by feasible and inexpensive measures within such limits as to be practically of no universal consequence; and with a view of stimulating others to join in the furtherance of so beneficial an object, we sincerely offer these data as bases or aids to their enquiries, hoping, ere long, to substantiate, by conjoint investigations, this desideratum of the Palace and of Many.

E. Holland, M.B., &c., &c.

Stoughton, Sussex, Feb. 11, 1862.

The Analogy between Plants and Animals

The analogy between plants and animals, similar as it is, has not yet been appreciated in all its consequences. Every one knows that many of the vital functions are represented by corresponding processes in vegetable physiology; that nutrition, absorption, secretion, respiration, and reproduction, are essential parts, in no metaphorical sense, of the life of flowers and trees. In some of their habits and properties, especially those connected with the circulation of their sap and the adaptation of their external coating to the exigencies of climate, these simple organisms, which we sometimes rudely term inanimate, display, if we may so say, a discrimination and a self-protecting instinct which have excited the marvel of naturalists. The conditions of health are not, indeed, the same, but similar, in the case of a tree and in the case of an animal; and the violation of these conditions is equally fatal in its effects. Hardier in many respects, in some othe s trees are far more delicate than animals, and, if their diseases could be ascertained and catalogued, they would probably look almost as numerous and formidable as those which fill medical text-books. Considering the immense value of timber, as well as the keenness of our national taste for ornamental woods, it is certainly strange that the pathology of trees should have been comparatively neglected in this country. The most recondite experiments have been carried on by scientific men to find out the exact proportions in which earth, air, and water contribute to their sustenance, and the ingenuity of landscape gardeners has been exhausted in devising methods for their safe transplantation. But all this time trees have been pining and dying in the prime of life, and strewing the forests with their almost worthless carcases, and yet no one seems to have bethought himself of ministering to their infirmities, and curing their maladies by timely remedies. Hitherto pruning and lopping have been almost the only operations known to foresters and gardeners; and if the site of a plantation has been selected with due regard to soil and shelter, and its surplus wood periodically thinned out, no other precautions against premature decay have been deemed necessary or practicable.

Our neighbours, the French, though they may be less alive to the beauties of scenery than ourselves, have always shown much skill in economizing the bounty of Nature. Roadside avenues are commoner in France than in England, and the utility of trees is thoroughly appreciated by the peasantry. We are not surprised, that the first step in the medical, or rather the surgical treatment of trees should be taken by a Frenchman. M. Robert, the gentleman to whom we refer, began his labours some twenty years ago, and since that time has undertaken the cure of vast numbers of trees, especially elms, in many parts of France and Belgium. He has taken out a patent for his system, and, if we may judge by the testimonials and honours which he has received from scientific societies and public bodies, his success must have been remarkable. His theory is, that the most inveterate enemies of trees, and especially young trees, are not excessive moisture or unfavorable peculiarities of ground affecting their roots, but certain tribes of xylophagous insects. Of these the chief and most truculent are the scolytes

and the cossus; and the art of curing the ligneous consumption, which has hitherto been considered mortal, consists, according to him, in destroying these insatiable parasites, and fortifying the trunk against their future ravages. His first experiments were made on the large trees bordering the public walks of Paris, and with these he proceeded cautiously and gradually. He scored them in longitudinal sections, hoping in this way to quicken the circulation of sap in the bark between the incisions, at the same time that he laid bare and extirpated the tunnel-shaped nests of numberless tree-consuming insects. Encouraged by the results of this attempt, he ventured to try the effect of stripping trees thus affected of their whole bark—an operation not much less bold in its own way than that of flaying a human being. However, we are told that it succeeded to admiration, that "the scolytes and cossuses found themselves instantaneously annihilated," and the grubs still in a state of unconsciousness, were buried alive in the process of cicatrization. The trees threw out new layers of "liber," or inner bark, and even increased in bulk, as we learn from another source, more rapidly than their unmutilated contemporaries. Ever since the discovery was made, the more slashing practice has been universally adopted, and we are told that thousands of elms, already with one foot in the grave, are now convalescent patients or restored to perfect health by the benevolent exertions of M. Robert.

No English trees, so far as we are aware, have yet come under M. Robert's scalpel, and we should be the last to recommend a hasty application of so trenchant a system to the noble clumps and single trees of our public and private parks. But it is certainly worth a trial; for, if there is any truth in the theory, it goes to prove that the hostile scolytes and cossuses are not only responsible for the damage done by themselves, but serve as sappers and miners of other invading insects, besides opening cracks and channels in which the wet lodges and eats into the wood which they generally spare. It is not impossible that further researches will disclose some means of prevention which would be preferable to M. Robert's cure. Meanwhile, however, we have every motive for endeavouring to save the scanty remnant of those woods which once covered Great Britain. As far back as the beginning of this century the neglected state of the Royal forests, and the wastefulness of permitting great oaks to fall, without taking any account of their value or supplying their places with young saplings, were pointed out by Nelson. Since that time we fear that the growth of new plantations has not kept pace with the cutting down of old ones, and that we are becoming more and more dependent on foreign countries for our timber. On free trade principles we have no right to object to this, but so long as it continues to be our interest to grow timber at all, it is surely a dictate of prudence to make it as remunerative as possible by preserving it from needless decay. Especially in the metropolis, where vegetable shade is so scarce and so grateful, the loss of a piece of foliage is a serious misfortune. How injurious the London atmosphere is to trees has long been known, and it has been remarked as a significant fact that the one which flourishes best in this smoky medium is the plane, which changes its outer bark annually. The elms have no such resource, and whether insects or impeded exhalation be the cause, these characteristic ornaments of our parks have a sickly look. It has been predicted by a prophet of dendrology that elms will be extinct in England before another century has elapsed. The bare idea of such a calamity should rouse the Woods and Forests—for the functions of that department have not expired with its name—from their lethargy on this subject. A generation must pass away before the place of a full-grown tree can be supplied, and the stately verdure of our parks testifies to a forethought which is still rarer now than in the days of our grandfathers. Men too often plant for themselves, and for themselves only, filling up with horse-chesnuts, and other trees of rapid growth, but short-lived beauty, the gaps in ancestral avenues of oak and elm. We lament this selfish short-sightedness when we see its effects on the country seats of individuals; but we have a right to exclaim against it when it affects the interest and pleasure of the nation. We cannot, indeed, blame Mr. Cowper and his predecessors for not having been the first to hail M. Robert's new invention. Now, however, that it has been sanctioned by experience, we are warranted in hoping that no time will be lost in employing some new Evelyn to report upon its application to the forest trees which Englishmen, from the earliest times, have learned to love and almost to reverence.—*Times*.

Care of Cows before Calving.

The following extract from a Prize Essay on the "Rearing of Calves," by Thomas Bowick, published in the Journal of the Royal Agricultural Society, (Eng.), is applicable to all latitudes:

"The health and condition of the cow before calving, greatly influence subsequent results. A late milked, lean, raking, ill-cared for beast has oftentimes an easier parturition than those that are better furnished in these respects. But her after milking has a tale to tell of neglect somewhere; and the scraggy, "set" condition of the calf throughout its after course, often arises more from this cause than from any other. Hence, we would say, dry the cow a *fair time* before calving, and see that she has something better than barley straw to live on, else the calf and its owner will assuredly lose by it. But what is regarded as a fair amount of time for being dry? If a cow brings her first calf when from two

to three years old,—which the majority do, though all will admit that it is too early —we should not care to milk her more than five or six months after calving. By this means she will grow and increase in size and value her second calf. But a cow from the fourth to the eighth year, if in good condition, eed not be dry more than six weeks or two months before calving; *i. e.* if fed with a horoughly liberal hand throughout the year. f more sparingly fed, or if the cow exceeds he latter age, then we should prefer her being ry three months before calving. But, of ourse, there are exceptions to be met with, hich cannot come under any general rule, uch as the case of animals whose flow of ilk is so strong as to continue almost up to he time when a new lacteal secretion com- ences."

How to Feed out Roots.

As root culture is greatly upon the increase this country, and many are trying their first xperiments with them this winter, we will rop a few hints upon their economical use. 'othing is more common than for beginners the business to confine an animal entirely the use of roots. They go upon the prin- ple that you cannot have too much a good ing, and give one to three bushels of turnips a day. The change in diet probably sets e animal to scouring, and turnips are voted humbug, when the humbug lies altogether ignorance of the feeder. All animals like a riety of food in their diet, and hay or raw should always form a part of their daily dder, no matter what else may be added.— his course should be followed, whether we e seeking to make milk or beef, or merely keep an animal in a thriving condition.— fattening a bullock, a bushel or so may be ven according to size, making out the rest the feed in hay, with some kind of grain meal. In feeding milch cows, the same antity may be given, mixing the sliced roots ith the cut hay, at three meals daily. The eal will add more to the quality than to the antity of the milk. Stock cattle with enty of hay and roots will not need meal keep them thriving. A good root cutter is dispensable in feeding out roots.

Then, as to the order in which the various ots should be used up, we always begin with e white, or soft turnips. These grow quick- and remain in their best condition but a w weeks. By the first of January they gin to sprout, and lose something of their lue. The ruta bagas and white French tur- s keep well through the winter, and may used at any time; carrots and sugar beets y be used as soon as they are dug. The ngel wurzel needs to undergo a curing process, and should not be used before Febru- ary. They are excellent keepers, and will hold on until June. If fed out the first part of the season, they make the bowels loose, and lead to a false estimate of their value.— Analysis shows that the mangel has nearly twice the nutritive matter contained in the Swedish turnip, and experiments in feeding confirm the results of the laboratory. They will yield from fifty to one hundred per cent. more in quantity, under ordinary circumstan- ces, and are much the more profitable root to raise. We find our root crops enlarging from year to year, and that, perhaps, is the best testimony we can give of their value. Our list this year embraces several varieties of the white turnips, rock turnips, and ruta bagas, yellow and white carrots, sugar beets and mangel wurzel.—*American Agriculturist.*

The Royal Farms.

THE SHAW AND HOME FARMS, WINDSOR.

[The following description of the late lament- ed Prince Consort's farms at Windsor, from a recent number of the *Agricultural Gazette,* will be read with interest on this side the Atlantic, and will probably afford some useful sugges- tions of a practical nature to some of our read- ers. Establishments of a similar description are now getting common on the Home farms of a number of the wealthy land owners of the United Kingdom.—EDS.]

As you walk down the "Long Drive" from the Castle you pass the grounds of Frogmore upon your left, and beyond them on the same side lies the compact homestead and residence known as the Shaw Farm. It has always been a home farm for the supply of the Castle. The late Prince Consort became its tenant in 1849; but up till 1853 it was more directly under the management of the late General Wemyss.— Since then it had been placed in the hands of the late Mr. Wilson, as steward for the Prince Consort; and his successor, Mr. Tait, the pre- sent manager, has accordingly been here but a comparatively short time. The manager has altered but little since 1853, when Mr. Wilson, under the Prince's instructions, commenced the formation of the short-horn herd. The princi- pal feature of the farm even still is the admira- ble equipment of the land with buildings—the exceedingly complete and well arranged farmery at the Shaw, and the perfect arrangement of sheddings, houses, and yards for stock nearer Frogmore, where also the royal dairy has been erected. The herd is, however, growing in numbers and in merit, and though the late Prince Consort had hitherto been an exhibitor of short-horned breeding stock, two or three

had been selected last autumn for a first illustration of his achievements as a short-horned breeder at the great show of 1862.

Though not landlord, as at Barton, the other relations in which he stood gave scope for the illustration of his character as an employer and a neighbour. And one of the most interesting of these illustrations was to be seen in the interest which he took in the welfare of the young men whom he employed. One part of the building at the Shaw farm is an eight-roomed house, where a number of them lodged. It is furnished with a room where they took their meals, and another used as a reading room and for an evening class. The attendance at this winter's evening school was registered, and "copies" and other marks of progress in education were periodically inspected by the Prince, who awarded prizes for attendance and improvement.

The Shaw farm includes 800 acres of land in the Park and elsewhere, 120 acres being arable. It is worked by six pairs of horses—a large number for the land, and more than would be needed were it not for the considerable extra labour connected with roads and estate management. About thirty men are employed, besides other hands, at haymaking and harvest times. The farm stud is wholly Clydesdale, and the Prince had been frequently successful as an exhibitor of them at English Agricultural Society's shows. His last act as the tenant of the Shaw farm about three weeks before his death, was to direct Mr. Tait to nail up over the stalls the premium cards which had been placed over two of his horses at Leeds, and which had lain till then in the farm-house unattached. In anecdotes of this kind, in the frequent walks taken by the Queen and himself round the two farmeries, in his personal inspection of the monthly report presented through Sir C. Phipps, in the instructions given with reference to competition at the national exhibitions, and in his frequent inquiries and conversation about the evening school, the Prince chiefly showed his interest in these arms.

The small quantity of arable land attached to the Shaw farm is managed on the five-field system, two corn crops being taken in succession. There is no lack of manure; the Park supplies immense quantities of fern, which is used as litter in the yards; and great store of yard dung is obtained thus, and from the consumption of hay by the large dairy herd, and that of hay and roots by the young stock. The arable land is accordingly in a high state of cultivation. Forty tons of mangel wurzel per acre are a common crop, and as much as sixty has been obtained. Those lying in store and now in daily use are certainly a remarkably fine sample. The corn is carried home and built in round stacks in a yard near the fixed steam engine. The roots are stored close by.

The buildings are remarkably complete and well arranged. They stand upon a square of ground, the sides running north and south, east and west, respectively. They consist in the first place of two rows of buildings along the two sides of this square, running north and south. The row upon the eastern side includes cart-shed at either end, two-storied lodging-house and school in the middle, and boxes and farm-horse stables.

The row on the western side includes carpenters' yard and shed, thrashing barn and granaries, steam engine and boiler house, floor for mixing chaff with pulped roots, and piggeries around three sides of a small square, in the midst of which is the food house for their supply. Between these two north and south lines, on the east and on the west sides of the square, there are three rows of buildings, &c., with roadways between them, and also between their extremities and the two lines already described.

The first row on the northern side includes foreman's house, stable, poultry house, and blacksmiths and carpenters' shops. The second row includes a series of boxes, hamels, (small yards) facing south, and double stalls, with a large root house for the supply of the whole, where Gardner's and Moody's turnip cutters are *fixed* and worked by strap from a shaft to which the motion is given by a small oscillating one-horse steam-engine standing on the floor, steam being brought for it along a pipe from the thrashing engine boiler house just across the road. The third row occupies nearly half the width of the square, and its whole length between the two lines of buildings at its east and west ends. It is divided midway by a wide shed in which shed-feeding of sheep on sparred floors is adopted, and on either side with sheds at their further ends are two capital yards for young stock. The sheep sheds are now full; they are said to answer well. One hundred and fifty Cheviot wethers are now fattening there. The floor is divided into pens about 9 feet square, holding about six sheep a piece; they receive cut roots and cake, and thrive fast compared with the progress made out of doors. As much as 100 cart-loads of capital solid dung are taken out from beneath them towards spring. The only fault in the arrangement is the imperfect access given to the vaults where it accumulates, and from which it has to be lifted through trap doors in the floor. The place was perfectly sweet, and dry and clean. The buildings are well supplied with corn and cake crushers, millstones, chaff cutters and turnip cutters, all worked by steam power. The granaries are on a third floor over the thrashing barn; the corn is thrashed by Messrs. Collinge & Co's engine, and delivered by travelling cups to the granary bins above, whence it may be sacked and delivered into carts outside by overhanging crane and pulleys from the end of the department.

Wood's combined reaper and mowing machine and other first-class implements of cultivation,

are lying in the sheds. The horses by
h they are worked are managed on the
tish plan; the men working during the
summer day from 6 to 11 and then com-
in, and again from 12 to 5—10 hours a day.
y are worked hard and well fed, receiving
bushels of corn a week, and a daily feed of
s in addition during seed time and severe
; and hay in effect *ad lib.* One foreman
ployed over the men, through whom Mr.
gives his orders; himself receiving them
any unusual arrangement is directed
ugh Sir C. Phipps.

short walk takes you across this to the
e Farm and dairy beyond Frogmore. It is
that the dairy herd is chiefly kept, and that
rinciple piggeries, those of the white Wind-
reed, are placed. The whole accommoda-
for live stock here is of the most perfect

e principal feature in the arrangement is
agnificent double-rowed cow-house, with its
central gangway, lofty roof, and roomy ar-
ement generally. The arrangements for
ring and for draining these and all other
of this farmery are most perfect. There
omplete system of pipage for the supply of
r to troughs on one level throughout the
ing. It is impossible in a short description
umerate the many clever points of detail
hich Mr. Turnbull, the Castle architect, has
ese buildings of his designing obviated a
many difficulties, with liabilities to nui-
. The whole of the soakage and drainage
e sheds and yards is conducted to a manure
, whence the liquid, collected in a tank,
be either pumped into water-carts and re-
d for direct application to the land, or dis-
ted, as it more generally is, over the stall-
re, which is moved at intervals and stored
rotection from the weather.

ady access is given to all the yards and
for litter, chiefly fern-leaf mown from the
and stowed away for its winter purposes,
here pig-food, hay, and roots are stored,
access is given by gangways to all the feed-
onses, stables, cribs, and boxes where the
are kept.

e of the chief features in these buildings
ally is the ample accommodation for pigs.
omparatively smaller white Windsor breed
n 16 to 20 breeding sows—are kept here.
pure Berkshire—10 to 12 sows—are kept
other farmery. In both cases there is
demand for the young stock for breeding
ses. Mr. Tait gives the preference to the
or breed, both for fecundity and for pro-
. As much as £700 worth of produce has
sold out of the piggeries at the Home
alone in a single year.

e dairy stock for which ample accommoda-
here provided, is for the most part kept
ese premises. Nearly 200 head of stock
w kept—about 80 cows in general of the
horn breed, besides 10 to 12 Alderneys.
The short-horns, of course are not yet all pure pedigree stock—the pure-bred herd has been growing into existence only during the last eight or ten years.

But since 1855 pure Booth bulls have been used over the whole. Prince Alfred (successful at the North Lincoln Show in 1859, and hired in succession by the late Prince, the Emperor of the French, and Lady Pigott), Fitzclarence, and now Lord Hopewell, have been used over both the pedigree cows and the other stock, and the whole are thus rapidly acquiring a high-bred and common family character.

The pure pedigree herd are descended chiefly from the following cows:—Alix (1853), by Earl of Dublin, bred by Sir C. Knightly, and bought at the Fawsley sale. Rachel, (1850), bred by the Prince Consort, by Goldsmith (10,277), dam Matchless, by Fitzhardinge (8073). Narcissus (1851), bred by Mr. Trotter, of Bishop Middleham, by 3rd Duke of York (10,166), dam Norma by (7996). Coldcream (1851), another Fawsley cow, also got by Earl of Dublin (10,178). Graceful (1852), bred by Mr. Majoribanks, got by Factotum (11,455). Bracelet (1856), bred by the Prince Consort, by Prince Alfred. dam Cowslip, by Bellville, &c; and Sally (1853), bred by the Prince, by Lord Poppington (10,437), also out of Cowslip. Sally was the second prize heifer at the Paris show in 1855. Besides these, a few others more recently introduced and some of shorter pedigree might be included. The cows first named have all been good breeders. Alix and Coldcream have each had five calves and Sally six since 1856. Graceful and Rachel have had six each, and Narcissus five since 1855. They are kept in fair breeding condition. Much of their milk goes to the dairy, and no roots, therefore are given them; they have hay, pasturage, and water. A ready sale at long prices is, of course, obtained for young bulls, and the heifers are taken into the herd and have already begun to add to its number, as by Annette, daughter of Alix; Rosewood and Raby, daughters of Rachel, &c.

The Prince had not been an exhibitor of short-horn stock in this country. He was, however, a successful exhibitor at the International Show at Paris, as already named, and had proposed exhibiting at the International Show this year at Battersea, to which end Prince Arthur, a yearling bull by Fitzclarence (14,552) out of Annette, a daughter of Alix, by Prince Alfred, and two yearling hifers out of Coldcream and Narcissus are being got ready—whether the plan will now be carried out is uncertain. The late Prince was, however, as is well known, a constant exhibitor of other stock at English shows, and a large case full of medals won by him lies on the table in the Queen's apartment at the farm-house. No fewer than 27 silver and 5 gold medals and 6 cups have thus been collected.

Near the Home Farm stands the royal dairy

—a most beautiful sight to see. An appartment *some 36 feet by 20 feet in height—the roof* supported by pillars—provides marble shelving all around it and marble tables in the midst, on which the white milk dishes stand. The floor, wall, ceiling are all of porcelain—either Minton's tiles as on the floor and roof (the latter presenting an openwork for ventilation), or white porcelain as on walls, or embossed and coloured porcelain as in cornicing and other ornamental parts. The whole is as perfect a combination of form, colour, and lustre as was ever provided for the purpose which it serves, and which is observed in the design throughout. The utensils are of the best common kind—common barrel churn, &c.

Hard by is the aviary and poultry house—a subdivided range of shed and wirework caged-in-yards, in which the various breeds of poultry and kinds of farm-yard fowl are kept.

You regain the Shaw Farm and the residence of Mr. Tait by a walk through the now deserted grounds of Frogmore House, beautiful in the magnificence of its timber trees, the smoothness of its grassy glades and slopes, and the mixture of its groves and mounds and ornamental water; interesting, too, for the mausoleum newly erected in their midst, where lies the body of H. R. H. the late Duchess of Kent; soon, however, to be more sadly interesting still for another resting-place soon to be provided, where the remains of the late Prince Consort will lie in the midst of scenes of quiet beauty, and close by the scenes just visited of intelligent activity, both of which he loved so well.

Alsike Clover.

Trifolium hybridum or Alsike Clover, is a species which appears to a certain extent, to combine the properties of the red and white clovers. It was considered by Linnæus to be a hybrid, and is cultivated to a considerable extent in the district of Alsike, in Sweden, from whence it derives its name; and was, we believe, first introduced into this country about 1834 or 1835.

It has for the last few years engaged the attention of agriculturists in Scotland and various parts of England to a considerable extent; and its reputation is now so firmly established, that we think it is likely to become much more extensively sown this season than ever it has been before. Its chief advantage consists in its succeeding on land which, from repeated sowings of red and white cloverseed, has become cloversick.

The treatment required for it appears to be very much the same as for other clovers. Our practice and that of our neighbours, on clay land, has been to drill about eight or nine pounds of seed an acre, on barley or wheat, about the first week in April, care being taken that the seed is not deposited too deep in the soil. After harvest, if it has been a growing season, we let our sheep occasionally run over it, for a month or two, if the weather is fine, opinion being that the treading of the sh consolidates the land, and is of great advanta to the Alsike, giving it firm root-hold. Ab the middle of October, it should be dressed w about six or eight loads of farm-yard dung, short as can fairly be got. In the spring, it require the usual bush-harrowing; and when has made a fair growth, the sheep may again put on to it, and allowed to remain until t first week in May, if intended for seed: if it can be depastured, as other clovers.

We are decidedly of opinion that it shou not be fed later than the first week in May, if t seed. Still, we have seen it fed until June; b the advantage appears doubtful, as it shows *harvesting of the seed too late on in the seas* and if dry weather sets in there is some difficu in getting it to make a good start. Last h vest a considerable quantity was left for s and the yield is said to be good, the quali fine, and the price more moderate than it h ever been before. It generally plants well; b last season was an exception, a large bra of the land sown having missed plant altogeth It has been ploughed up for beans, mainly on we consider, to the inferiority of last year's se In ordinary seasons, even when thin in t spring, it tillers very much and fills up in a markable manner.

When required for mowing, it is left in *same way as red clover, and on land in g* fair condition will cut two tons of hay an a The feeding qualities of the hay are said to considerable, but we have seen no analysis of value compared with ordinary clover hay.

Some difference of opinion is entertained a the comparative merits of this variety and clover for the despasturing of sheep; it being firmed by many growers that sheep will leave other kind of grass or clover to feed on the Alsi whilst others consider that its principal merit sists in its succeeding so well on cloversick its perennial habit and fibrous root being so similar to the red or white clover. Whe has been grown, it has invariably been found excellent preparation for wheat; and we no doubt it will shortly become sown quite extensively as either red or white clover, prove a most valuable acquisition to our art ial grasses. The more it becomes known, greater will be its cultivation; the high p that the seed has previously borne, and scarcity, have hitherto prevented its more tended use.—*Mark Lane Express.*

How to choose a good potato.—A co pondent of a Scottish paper gives the follow rule:—"The finest, mealiest, and most nutri potatoes are always denser and heavier than soft and waxy. By taking advantage of difference in their special gravity, the light inferior potatoes are made to swim on the face of a solution of salt, while the heavy good sink to the bottom."

Agricultural Intelligence.

Spring Shows.

e are informed of the following Shows to e place this Spring. We request secretaries Agricultural Societies to inform us of the e of their exhibitions at as early a date as sible, so as to admit of publication in time e of use to those interested:—

ullarton, Logan, and Hibbert Agricultural iety, at Mitchell, April 2.

est Riding of York Agricultural Society, at ton, April 23.

Patents of Invention.

UREAU OF AGRICULTURE AND STATISTICS, *Quebec*, 20th Feb., 1862.

is Excellency the Governor General has pleased to grant Letters Patent of invention for a period of fourteen years from the thereof, to the following persons, viz:—

mes W. McLaren, of Lowville, in the nty of Halton, "An improved feed gear for w Cutters.- Dated 26th November, 1861.

wis Comer, of the township of Hinchink, in the County of Frontenac, Mechanic, improved Bee-Hive."—Dated 29th Nov.,

omas Blanton, of Drummondville, in the ty of Welland, Carpenter and Joiner, "An oved Broad-Cast Seed Sower and Drag." ted 29th November, 1861.

win R. Langs, of the township of Brantford, e County of Brant, Farmer, "A portable ubstantial Fence-post and Fence."—Date November, 1861.

ilip Cady Van Brocklin, of the town of ford, in the County of Brant, Iron Founder, improved combined Grain Drill, Cultivator, orse Hoe."—Dated 29th November, 1861.

a Branch Southwick, of Mont St. Hilaire, County of Rouville, Manufacturer of Wool lax dresser, "A new and useful machine parating shives, chaff and dust from the of Flax, Hemp, &c., to the be called thwick's Tow Cleaner."—Dated 5th Dec.,

thew Henry, of the township of Compton, County of Compton, Cabinet-maker, "A low, to be called Henry's complete Plow." ed 9th December, 1861.

thew Henry, of the township of Compton, e County of Compton, Cabinet-maker, improved Fanning Mill."—Dated 9th ber, 1861.

es Howell, of the township of Dereham, County of Oxford, Moulder, "An Iron moulding and casting Plow Shares."—16th December, 1861.

liam Mahaffy, of the town of Brampton, County of Peel, Blacksmith, "An im-, Plow."—Dated 16th December, 1861.

Horticultural.

Fruit Growers' Association.

We again insert the following questions, and trust that those who have opportunities for observation, will give them their attention.

THE FRUIT GROWERS' ASSOCIATION OF UPPER CANADA

Desirous to collect and circulate information relative to the production of the several kinds of fruits in the various parts of the Province, respectfully requests the several Horticultural societies, County and Electoral Division Agricultural societies, Township Agricultural societies, and all gentlemen interested in the subject of fruit culture to cause answers to the following questions to be prepared, and sent to the Secretary, Mr. D. W. Beadle, at St. Catharines, C.W., on or before July 1st, 1862

As the questions are all numbered, the answers may be numbered to correspond, and thus avoid writing down the question intended to be answered.

QUESTIONS.

APPLES.

1. What varieties would you recommend as most suitable to be planted in your locality?
2. What varieties are most profitable for market?
3. What varieties are the most hardy?
4. What varieties have been tried in your neighborhood and found too tender?
5. Are apple trees subject to any disease, or the attacks of any insects in your section, and if so what?

SEASON FOR TRASPLANTING.

6. What season has been found most favourable for transplanting, spring or fall?

DWARF TREES.

7. Have dwarf apple, pear, or cherry trees, or either of them, been planted in your vicinity, and with what success?

PEAR.

8. What varieties of pear would you plant in your section?
9. What varieties are most profitable in your locality for growing fruit for market?
10. Have any varieties been planted and found too tender for your climate, and if so what are they?
11. What varieties do you find to be the most hardy?
12. Are pear trees subject to any disease with you, or to the attack of any insect, and if so what?

PLUMS.

13. What varieties of plums succeed best in your section?

14. Have any varieties been tried which proved too tender for your climate, and if so, what?

15. Which varieties would prove most profitable for growing fruit for market?

16. Is the fruit stung by any insect in your locality, thereby causing the fruit to fall prematurely, and if so what insect?

17. Is the tree liable to any disease, or to the attacks of any insects, and if so what?

CHERRIES.

18. What varieties of cherries succeed best in your neighbourhood?

19. Have any varieties proved too tender to endure your climate, and if so which are they?

20. What varieties can be profitably planted for marketing the fruit?

21. Are the trees subject to any disease, or to the attacks of any insects, and if so, what?

PEACHES.

22. Can the peach tree be grown in your section, and if so, what varieties succeed the best?

APPRICOTS AND NECTARINES.

23. Can the apricot or nectarine be grown in your section, and if so what varieties succeed the best?

QUINCE.

24. Can the quince be grown successfully in your section?

STRAWBERRIES.

25 What varieties of strawberry have been found to succeed well in your neighbourhood.

26. What varieties would you plant for market?

RASPBERRIES.

27. What varieties of raspberries have been found to succeed best in your locality?

28 What varieties do you recommend to plant in your neighborhood, for growing fruit for market?

GOOSEBERRIES.

29. What varieties of gooseberries succeed best in your section?

30. Is the fruit ever covered with mildew?

31. Do you know any varieties that are exempt from mildew in your section?

32. Do you know any means of preventing the mildew, and if so, what?

BLACKBERRIES.

33. Has the new Rochelle blackberry been tried in your vicinity, and with what success?

CURRANTS.

34. What varieties of red, white, and black currants are most esteemed in your locality?

GRAPES.

35. What varieties of grape have been planted in your section?

36. Have any of them proved altogether too tender for your climate, and if so, which?

37. Have any of them proved perfectly hard and if so, which?

38. Do any of them invariably ripen the fruit well every season, and if so which?

39. Are there any vineyards planted in your neighborhood, and if so with what varieties?

40. Any other information, pertinent to the subject, such as the character of the soil that predominates in orchards of your section; the soil found to be most suitable to the kinds of fruits, &c.

41. Do you know of any seedling fruit of merit in your vicinity? If so please give its history and description; kind, size, color, quality, time of ripening, growth of tree, &c., &c.

Editors of papers throughout the Province are requested to give the above one or two insertions, in order that there may be every opportunity afforded to make the information sought as full as possible.

Fruit Culture in Orchard Houses.

Read by Mr. D. Murray, Nurseryman, Hamilton, before the Hamilton Horticultural Club, on the 6th February, 1862.

MR. PRESIDENT AND GENTLEMEN,—In my former paper on the orchard house and its culture, I gave a general view of the system; also a representation of my hopes of its future; and as I promised at that time, now make a few remarks on the culture and management, confining myself principally to my own experience.

I stated in my last paper that few trees give more satisfaction in the orchard house than the peach, the nectarine and vine; this as they being the most valuable fruits. The apricot, the plum, the cherry, the pear, and fig, are also well adapted for pot culture. With many varieties of the smaller fruits, the system adopted is very simple, and may be accomplished by any one who will give the attention. During the summer months we select and mark amongst the maiden plants in the nursery lines the different kinds we want for fall potting. Those so marked are stopped and pinched during the season of their growth; much is gained in this way by giving the trees a good start, whether as pyramid or bush. We also make it a point to have none but rooted trees of best quality; they are lifted early in the fall, dressed and potted in twelve inch pots; this size I find large enough for any tree for the first few years; when the plants are weak smaller pots may be used. The compost we use is the top spit of rich old pasture land, say of it two-thirds, and one-third of well decomposed manure and leaf mould, well mixed together, but not sifted, prepared three months previous to use; a good drainage of oyster shells, broken crocks, or charcoal in the bottom of the pots. The roots of the plants being then drained, they are potted; care must be taken that the fine roots are all nicely spread

the mould well primed about them. When is done, give a good watering, and set aside on an outside border, where they remain until there is appearance of frost; remove them under cover, lay on their side, put on a good covering of straw to protect severe frost during winter. Examine them ently when in their winter quarters in case ttacks of rats or mice. When spring ar-, uncover and place them in the orchard e; at first, water sparingly, but as vegeta- begins to move and the plants commence th, watering is increased. Ventilate freely n the weather is favourable. Trees are clas- pyramids, dwarfs, or bushes. During the ns of growth particular attention is paid to orm of the trees. Care must be taken in hing and stopping, the only means by which ll proportioned tree is got at, and well fur- d with fruit spurs. The syringe must be freely morning and evening, when the trees ot in blossom. When at this stage the are subject to be attacked by the aphis; must be carefully watched, and when they their appearance, either fumigate or ge with tobacco water. Some of the young trees will show fruit buds the first season, even produce fruit, but this must not be itted, as it is injurious to the future welfare e tree.

e fruit trees are all top-dressed in fall or spring, the latter period I prefer in this try, the trees being kept in a dry state all r exhausts the soil. If this is properly it is not necessary to change the pots for a r of years. We use the same compost in ressing as formerly recommended in potting rees. Take the old mould out about half down the pot, taking care not to injure the g rootlets or spongioles that are clus- round the stem. When that is done, we fill up the space with fresh compost, ram- t firmly down with a piece of stick made he purpose; give a good watering, thor y wetting the whole of the ball. The old aken out of the pots, if examined, will be quite exhaused, and full of small fibrous , the greater portion of which will be found dead or dying; this is a natural conse- e, they having done their work.

pot culture there is an annual provision of rootlets emanating from the stem as rly referred to, they get hold of the fresh ost, very soon run through it, and become rincipal feeders of the tree. We occa- ly use liquid manure for all our trees dur- e growing season, but only by the hand of perienced person, otherwise there would isk, many of the liquids being very pow- When it can be obtained, a liquid from droppings is very excellent, and may be without danger. When the trees are in om air is given freely, but if so at an period in the season, when the weather will not permit of it, or of the bees being in to assist in the work of impregnation, we must do it by occasionally giving the stem of the tree a gentle rap with a stick when in bloom, always making choice of a clear day. We find this simple method quite sufficient for the dispersion of the pollen. Those having plenty of time at their command may do this nice piece of work with a camel's hair brush, and do it very effectually by passing the same slightly over the anthers when the pollen is full up. This is a very interesting piece of work. Care must be taken in thinning the fruit in proper time, and not to over-crop the trees. In dry weather continue to give plenty of water, be watchful of the red spider, and all other pests that affect the trees at this season. When the fruit is well advanced give plenty of air both day and night, without which the fruit will not be high in flavour.

For vines, add to the former compost a little crushed bones, giving plenty of water; and as soon as the roots begin to fill the pots give a good watering with liquid manure every third day; attend punctually to stopping the shoots and laterals; stop one joint above the fruit branch, and the laterals two from base on the shoot they spring from.

In conclusion, I beg to state I might have gone more minutely into this subject, but my main object was to convey to you my views as shortly and briefly as possible, trusting you will all encourage the orchard house and pot culture.

The Poultry Yard.

Something about Hens.

A correspondent of the *N. H. Journal of Agriculture* says: "It is a pleasant recreation to tend and feed a bevy of laying hens. They may be trained to follow the children, and will lay in a box. Egg shells contain lime, and in the winter when the earth is bound with frosts or covered with snow, if lime is not provided they will not lay—or if they do lay the eggs will of necessity, be without shells. Old rubbish lime from chimneys and buildings is proper, and only needs to be broken for them. They will often attempt to swallow pieces as large as a walnut. I have often heard it said buckwheat is the best food for hens; but I doubt it. They will sing over Indian corn with more animation than any other grain. The singing hen will certainly lay eggs, if she finds all things agreeable to her; but the hen is such a prude, as watchful as a weazel, and as fastidious as a hypocrite—she must, she will have secresy and mystery about her nest—all eyes but her own must be averted—follow her, or watch her, and she will forsake her nest and stop laying. She is best pleased with a box, covered at the top, with a backside aperture for light, and side door by which she can escape unseen. A farmer may

keep one hundred hens in his barn, and allow them free liberty to trample over his hay-mow, set where they please, and lay where they please —and get fewer eggs than one who has a department especially for his fowls, and keeps but half as many, and furnishes them with corn, lime, water and gravel, and who takes care that his hens are not disturbed about their nests.

"Three chalk eggs in a nest are better than a single egg. Large eggs please them. Pullets will commence laying earlier in life when nests and eggs are plenty, and other hens are cackling around them. A dozen fowls, shut up away from the means of obtaining other food, will require something more than a quart of Indian corn a day. I think fifteen bushels a year a fair provision for them; but more or less, let them always have enough by them—and after they have become habituated to finding enough at all times, they take but a few kernels at a time, except just before retiring to roost, when they will fill their crops. But just so sure as their provision comes to them scantily so surely will they raven and gorge themselves to the last extremity and will stop laying. One dozen fowls, properly tended, will furnish a family with more than 2,000 eggs per year, and 100 full grown chickens. The expense of feeding the dozen fowls will not amount to eighteen bushels of Indian corn. They may be kept as well in cities as in the country, and will do as well shut up the year round as to run at large—and a grated room well lighted, ten by five feet, or larger if you can afford the space, partitioned off from the stable or other outhouse, may be used as a hen-house In the spring, (the proper season) five or six hens will hatch at the same time, and the 50 or 60 chickens give to one hen. Two hens will take good care of one hundred chickens, until they are able to climb their little stick rosts. They should then be separated from the hens entirely. They will wander less, and do better, away from the parent fowls.—Chickens put in the garden will eat up the May bugs and other destructive insects; but for my own part I much prefer four or five good sized toads; for they are not particular about their food, but will snap up ants and bugs of any kind, and will not, if a good chance offers, refuse the honey bees, but will down them in a hurry. In case of confining fowls in summer, it should be remembered that a ground floor is highly necessary, where they can wallow in the dirt, for they like it as will as the hog likes muck."

Veterinary.

The Progress of Veterinary Science.

The following is a brief report of the introductory lecture, delivered by Mr. Andrew Smith, Veterinary Surgeon to the Board of Agriculture-at the commencement of his course of lect on Veterinary Science the present winter:

In commencing a course of study and systematiu enquiry into the details of a pro sioo,it is desirable and interesting to know a tle of the early history of such profession. I will, therefore, first endeavor to give a sl outline of the progress of the Veterinary During the last century, the study of the dis of the lower animals may be said to have be in a somewhat scientific manner, although find, previous to that time, even before Christian era, that celebrated and eminent practised both human and veterinary medic Hippocrates, the most eminent physician of times, wrote an elaborate work on the ha and practised the healing art indiscriminately both man and beast. During the 17th cent numerous treatises on the lower animals their diseases were brought before the public number of them were but of little value, all tended to direct attention to the dis of these animals.

In 1761, the first public school for the te ing of the Veterinary art was established Lyons, under the patronage of the French G vernment, which institution had for prin the celebrated Bourgelat, well known to Medical profession by his writings on Anat and Medicine. A regular course of Veteri Medicine was there taught, under which stud acquired an acquaintance with the various f of disease, and the action of Medicines on mestic animals. A few years later was e lished the present school at Alfort, near P. which is still supported by the Government, of course is in a most flourishing condi Subsequently, schools were established in R sia, Germany, Austria, London, &c.

About the year 1780, St. Bel, a French came to London, and made proposals to lectures on Veterinary Medicine; however propositions did not meet with success and returned to France. Two years afterwards Bel made a second attempt to found a scho London, and this time he was taken notic by the Agricultural Society of Odeham, an institution was founded, called the Veteri College of London, of which St. Bel was principal and Mr. Blain assistant. However Bel was not spared to see the fruit of his l brought to maturity, being suddenly cut o the midst of his usefuluess. After St. death, it was necessary to appoint a pers fill the vacant chair. Mr Clarke, of Edinb the King's Farrier for Scotland, was asked come forward as a candidate, but declined. Morecroft, an eminent practitioner of Lo who had written a treatise on Lameness in Horse, and who also had studied the Me Profession, and afterwards learnt the Veteri Science in France, was next brought forw and also Mr. Coleman, who had somewhat tinguished himself by some experiments on

. These two gentlemen were elected as Professors. A regular course of lectures delivered, and dissections of the horse car- on. A committee was appointed, consisting e most distinguished Medical practitioners ondon, to examine the pupils, and such s as this committee considered to have ac- l a sufficient knowledge of the Art were ed Certificates.

e students attending those lectures were ed the privilege of attending the lectures ris) of the Medical committe, a number of embers composing it being teachers of cine. And among the first to whom the rinary profession are indebted, was that atigable promoter of human medicine— Hunter. The British Government now l a sum of money annually for its suppo.t, the rank of Commissioned Officers was ed to such as were appointed to the Army. ast India Company, seeing the beneficial s produced by such appointments, also ap- ed Veterinary Surgeons to serve with their in India. After Mr. Coleman's death, Mr. l, formerly assistant professor, was appoint- ead Professor. He again was succeeded r. Spooner, who is at present Principal of oral Veterinary College, London.

Simonds has instituted lectures on the my, Physiology, and Diseases of the Ox, , and Dog, and Mr. Morton on Chemistry, fateria Medica. Mr. Morton has now re- and is succeeded by Mr. R. E. Tuson.

average attendance of students at the n College is about 100; and a student attend all the different courses taught at stitution for at least two years before pre- g himself for Examination to be granted oma. The Board of Examiners consists ical Professors and Practitioners, also a n number of Veterinary Surgeons, who liated as members of the Board. Of numbers of these students do not intend actice professionally, but are gentlemen rmers, &c., who perhaps, attend for one n, and get some insight into the Anatomy hysiology of the horse, and the nature of ore common diseases affecting Horses and , and which is of the utmost benefit to as owners of Stock.

e than forty years ago, Professor Dick, inburgh, commenced to give instruction terinary Medicine, and was recognized by ighland Agricultural Society of Scotland, succeeded in establishing the Edinburgh nary College.

subject of Veterinary Surgery was first ht permanently under the consideration of ghland Society of Scotland, at its general g in June, 1823, when a committee was ap- d and arrangements made with Professor to deliver a course of lectures. But pre- to this, he had given publicly a series of s, for several years.

lectures under the auspices of the Society were continued in 1824, '25, '26, '27 and '28— during which time the attendance of pupils was limited. The number of students educated at the Edinburgh College, who obtained the Highland Society's Diploma from 1838 to 1844 were 263; the number who obtained the Diploma of the Examining Board, which was appointed by the Royal College of Veterinary Surgeons, and sat at Edinburgh from 1845 to 1848, was 59; and the number who have received the Diploma of the Highland Society, after resuming its examinations from 1848 to 1861, was 333; and in all 655.

The average annual attendance for the two or three past years,—professional, amateur and others, has been over one hundred.

The Board of Examiners consists of Professors in the Edinburgh and Glasgow Universities, Medical practitioners of distinction, and eminent veterinary surgeons from different parts of Britain.

The course of study of the London and Edinburgh Colleges is the same, and consists of the Anatomy and Physiology of the horse, and other domestic animals, and their diseases; Chemistry, Veterinary Materia Medica, and clinical instruction.

The branches taught by the different teachers are, at the London College:—Anatomy, Physiology, and Pathology of the Horse, Prof. Spooner.

Anatomy, Physiology, and Pathology of other domesticated animals, Prof. Simonds.

Descriptive Anatomy, Assistant Prof. Varnell.

Chemistry and Materia Medica, R. E. Tuson.

Anatomical demonstrations, M. W. Pritchard.

Subscribers of Two Guineas per annum, or of Twenty Guineas for life, are entitled to have horses examined as to soundness upon purchase free of any charge; also to have horses treated by the Professors in the infirmary of the College by paying only for their keep, at the rate of one guinea per week, for each horse.

At Edinburgh the classes are as follows:—

Veterinary Medicine and Surgery by Prof. Dick.

Veterinary descriptive Anatomy and Physiology, Mr. Strangway, V. S.

Practical Anatomy, Strangway, V. S.

Chemistry, Veterinary Materia Medica and Pharmacy, Dr. Dalzell.

Physiology, Dr. Young.

Practical Pharmacy and Clinical instruction, Prof. Dick, assisted by Mr. Worthington, V. S.

About four years ago another Veterinary College was commenced in Edinburgh, conducted by Mr. Gamgee, a graduate of the London College, and afterwards an assistant to Professor Dick. The number of students attending the new Veterinary College last season was between 30 and 40, and the course of study is similar to that of the Edinburgh and London Colleges.

Veterinary Students in Britain are rapidly increasing and so is the demand for the services of the Veterinary surgeon. The prospects of the

profession improve with the progress of agricultural pursuits; districts are opening up for the Veterinary practitioner, in which at one time every sick animal was believed to be bewitched, and the tricks of the sorcerer were trusted by credulous and timid people.

Agricultural Literature is improving so much, and farming in the remotest districts is being carried on with such intelligence and enterprise, that there is now profitable employment for Veterinarians, where, certainly, a few years back they could only have expected to starve.

Veterinary science is more appreciated on the Continent of Europe than anywhere else. In France, there are upwards of 3,000 Veterinarians, and the Emperor grants £20,000 to support the French Veterinary Colleges.

Veterinary Science is to the lower animals what Human Medicine is to man; and it must, therefore, be highly beneficial to the lower orders of creation: and it can only be properly attained by a regular course of study. Facts in Medicine can only be discovered by patience and industry. The duly qualified Veterinary practitioner enters upon the duties of his profession with an understanding of Anatomy, Physiology, Nature of Diseases, Chemistry, &c., the same as the Medical practitioner. The Medical man often experiences a difficulty in coming to a correct diagnosis of disease, although he finds a useful guide in conference with his patient. How much more difficult must it be for the Veterinary Surgeon—whose patients are dumb animals, and therefore, he can only judge of the state of their health by physical examination? Hence the greater need of a proper system of training. Even supposing a correct diagnosis cannot be come to, such rational treatment can be adopted by which, upon a second examination, symptoms may be developed by which the precise nature of the disease is detected; and not in that hap hazard method which is practised by many, who attempt to prescribe for the sick and dying, without the least idea of the disease, and the nature of the drug which they are giving, supposing, perhaps, they have inherited medical skill from their ancestors.

The Veterinary practitioners are in a much better position for prosecuting their studies along with the practice of their profession than were the practitioners in the Medical Department, as from their class of patients, they have ample opportunity of prosecuting Physiological and Anatomical studies, and when cases prove fatal, of making post mortem examinations. But to make a post mortem examination, it is necessary to be conversant with the state of the different organs of the animal body when in health. To treat any organ when in a diseased state, it is also essential to know the structure and functions of that organ, or organs, and therefore, in the first place, before undertaking the treatment of diseases of the lower animals, we must study their Anatomy and Physiology.

The Veterinary Surgeon is now convinced that no such sure way lies open to him as a broad and accessible one through the dissecting room. In the Medical profession, the most eminent trace their success to their Anatomical acquirements, and it is owing to this that science so triumphantly exercises the sway over the Medical world at large. By learning Anatomy we become acquainted with the situation, form, connexion, use, and structure of every part of the body.

Percivall says:—"A Professor of Medicine with a mind unfurnished with a knowledge of Anatomy and Physiology, is precisely in the situation of a mechanic who undertakes to repair a deranged or broken machine without the acquaintence with its mechanism or operation. Both such persons are impostors in their profession, either of them perchance may do good but there is ever much to be apprehended that they may be working some irreparable mischief. We hear of wonderful cures being performed by persons having no pretensions whatever to medical science, and in this hit or miss manner, it cannot be denied that some very valuable discoveries have been made. Could however, but set against these discoveries, excellent as some of them may have turned out to be, a true catalogue of the failures attendant upon the experiments in which they had their origin, we are sorely afraid that the per would exhibit a complexion, which even discoverers themselves could not regard without mingled dissatisfaction and remorse.

The Veterinary profession, I am glad to see has progressed equally with other professions in fact more so than many, as it ranks equally with professions which can boast hundreds of years' standing, and is still improving. I do not mean to say it has reached the same degree of perfection, but it is recognized as a science and can claim kindred with human medicine. They spring from the same source. To the Agriculturist, and especially to the owners of Stock here in Canada, where qualified Veterinary practitioners are few, a knowledge of the diseases most common to Cattle and Horses is of great advantage, not only as to treatment but what is better, prevention, especially where there is much quackery carried on. In the hands of a person ignorant of the nature of disease, it is better trust more to nature than to resort to such severe measures as are sometimes used which instead of relieving only aggravate the disease. Some poor animals receive too much treatment, and I have met with not a few cases of such in Toronio.

In Britain, teaching the farmer how to treat his Stock does not do away with the services of a Veterinary Surgeon. He may help him out when no other means are at hand, but he is too vain enough to think that he can supersede the regular professional man. On Continental Europe and in Britain, the services of the

ary Surgeon, I may say, are almost in as ch request as the services of the Medical , and I have no hesitation in sayingthat such ces will be recognized in Canada, for here are the people more intelligent and evering, and the stock produced in this ntry will compare favorably with those of other.

From the Scotch Farmer and Horticulturist.

The Diseases of the Pig.

ere are many admirers of the "payer of ls" who bestow as much care and attention he sty as the lord of the Manor does to his urite horses. Cleanliness, good food, and larity in feeding, &c., tend to develop a ling into the proportions—frightful to the of many—which insure a prize at agri- ural shows. We rather admire the cleanly pig, not overburdened with fat, which y of the thrifty villagers in England rear, rder to eke out the scanty wages on which rge family has to be kept. Disease now then appears amongst these animals, but of the most frequent causes of death and hting hopes is perhaps the hand of the k, who, if consulted, should the pig seem of sorts, may try his hand at giving it a of castor-oil, when, as in the process of ring such an animal, he gets "more noise wool," as a few loud screams precede the t of the physic, which far more frequently than cures. There is no animal so easily ed as a pig; and we can mention several nces in which young practitioners have ed mixtures fearlessly into the mouth of eaming pig, but only to feel a dead weight their hands and see the poor animal hed lifeless at their feet. It is therefore e that tasteless medicine in powder should be used for this animal, and the most ble is tartar emetic. There is no medi- more generally useful in the diseases of ig, and it is given in some cases in doses iently large to produce vomiting—that say, from five to ten grains in a little slop. better to give rather a full dose for such pose than too small a one, because if the is not at once apparent, the drug enters ystem and does more harm than good. o not advise the combination with calo- but a very worthy rival to antimony in imation of some of the best informed rians in the diseases of the pig is the hellebore in doses of from five to fifteen . This drug is an active nauseant readily in food, and is regarded as a specific in equent and severe attacks of sore throat, so often present a malignant character pig. But we must revert to the admin- on of tartar emetic in small doses, re- at short intervals. About a third of a grain, with ten grains of nitre, given in a little slop several times a day, and stopped when it induces sickness. In severe inflammatory affections, we can recommend this even more than the white hellebore. Although Youatt mentions antimony as an ingredient in many applications for this animal, it is not to be recommended, and we prefer cleaner mixtures than train-oil and sulphur, &c.; but half an ounce of white hellebore, over which a quart of boiling water is poured, constitutes a good lotion for this disease in the pig. White hellebore is, in some animals, a very dangerous poison, but the pig appears to resist its effects in a remarkable manner; and Tabourin, one of the most distinguished authors on veterinary medicines, says that the *poisonous* dose of white hellebore is unknown. As a useful purge for the pig, we may mention a couple of croton beans bruised and mixed with food. Nitre and sulphur are amongst the remedies often of service, and easily administered in food.

The foregoing remarks on medicines to be used for the pig are, we think, called for in agricultural journals, because far too little attention is paid to the kind of medicine, and mode of administration to be adopted, in treating the disorders of the porcine tribe.—Bleeding is the great and universal panacea; but we do not agree with Youatt when he says "this is a most useful and necessary operation, and one which, in many diseases, is of vital importance." It is far less called for in the pig than other animals, and we cannot sufficiently deprecate the plan of docking a bit off the tail, or cutting the ear of the pig whenever he appears a little mopish. Paddy's story imparts a useful lesson. He bled the pig so often by cutting the tail, that in one attack the animal died, because, said Paddy, "he had no more tail to cut, and had to wait for it to grow again." The amount of blood lost by the tail is trifling, and the operation may be justly condemned as useless.

To see a sick pig is in the estimation of some even more rare than seeing a dead donkey, and it may be deemed a waste of time to devote valuable space to the consideration of the diseases of the animal. But there are those whose experience would indicate a heavy mortality, and it is undoubtedly the fact that very dangerous contagious fevers, destructive parasitic disorders, and other maladies are to be witnessed in well-stocked sties.

Just as all diseases of the dog are called "distemper," many of those of the horse are termed influenza, and a large number in cattle are at once declared to be pleuro-pneumonia, so are all the diseases of the pig known by the absurd name of measles. We say absurd because there is no similarity at all between the many forms of disease termed measles in the pig and the same affection as seen in man.

We could cite several instances of sudden deaths in the *pig* which veterinarians have declared to be due to measles, whereas this name has been applied by the better informed exclusively to that speckled condition of the skin due to hydatids beneath it, and which hydatids—all members of the genus Cysticercus—pervade the soft tissues in the body, and if swallowed uncooked, produce tape-worm in man. This fact alone proves the importance of knowing more than is usually done regarding pig diseases.

We have recently discussed the injurious effect of overfeeding horses, sheep and cattle. We can furnish an admirable illustration of the *plethoric* state in pigs. Our readers must not forget that plethora signifies that condition of the system when the blood is in excess both as to quantity and richness; but chiefly the latter. A brewer in Edinburgh kept a few young pigs to supply himself with choice morsels of pork and ham. During the past winter on a showery day, the pigs were declared to be trembling, foaming, and fuming. All, without exception, manifested symptoms of disturbance, varying in severity, but the best were most dangereously ill. Three died in rapid succession, and advice was sought. The poor pigs had received an extra rich supply of food, containing a heavier proportion of good barley than they were accustomed to; their high condition would not admit of such an addition to their supply, and they were thus destroyed. Our readers will perhaps remember the instance before recorded of high fed cattle being killed by a too liberal supply of the best oil-cake. It is a parallel case to the one here mentioned among the pigs.

It is evident that moderatian in feeding, and perhaps an occasional dose of medicine, are as essential for the health of the pig as for that of other domestic quadrupeds.

Bots in Horses.—The editor of the Indiana *Farmer* says he publishes a receipt for the third time, by special request of those who have used it with perfect success. It is as follows:—

"Take a tablespoonful, a little heaped, of alum, and the same quantity of copperas, pulverize them fine and put them into a pint of vinegar. Pour it down the horse's throat. It will generally afford relief in five or ten minutes."

Miscellaneous.

Historical and Scientific Facts about Petroleum.

Within the last three years there has sprung up in this country an important and extensive branch of industry—the refining of petroleum, or, as it is sometimes called, a mineral oil, which is already a staple article, and its use as an illuminator, is becoming every day more extensive. When properly manufactured it is not explosive, it affords a brilliant flame, it can be furnished at a moderate price, and, moreover, its source of supply in this country are abundant. The subject is one of so much general interest that we are induced to publish the following interesting article concerning this substance, which was sent to us by a member of the Chemical Society of Schenectady, N. Y.:—

Petrolelum is not of constant composition but is a variable mixture of numerous liquid hydro-carbons, as *benzole*, *naphtha*, *kerosene*, &c., with paraffine, naphthaline, and asphaltum, solid hydro-carbons. It is of a very dark brown colour, and in density varies from a thin oil lighter than water, to a thick viscous liquid heavier than water. The lighter qualities yield the larger proportion of burning oil.

The evidence of the most ancient occurrence of petroleum is among the ruins of Nineveh, whose existence dates back more than two thousand years before the Christian era. In the destruction of this city, an asphaltic mortar was extensively employed, the asphaltum being obtained by the evaporation of petroleum.

A later mention is found in the accounts of Babylon, whose walls were cemented with asphaltum, *which was poured, in a melted state*, between the blocks of stone, and an indestructible mortar thus secured. This asphaltum was procured from the fountains of Is, which were about one hundred and twenty miles above Babylon on the Euphrates. Together with saline and bituminous water, it issued from a rock and was conducted into large pits. The oily matter was then skimmed off and solidified by atmospheric evaporation. These springs, from the abundance of their products, attracted the attention of Alexander, Trajan and Julian, and even at the present time, asphaltum procured from them is sold *in the neighbouring villages of Hit*.

From time immemorial asphaltum has been found on the shores of the Dead Sea, and the lake one of the most remarkable *localities for it*. The sea, as is well known, is of supposed volcanic origin; and is the probable site of the ancient cities of *Sodom and Gomorrah*. Its surface is 1300 hundred feet below the surface of the ocean, and it has been fathomed to the depth of two thousand feet. In several places no bottom has been reached, and, owing to internal convulsions, the depth changes from time to time. The water is very dense, holding in solution twenty-five per cent. of solid matter, of which seven per cent. is salt. The bituminous substance is up-thrown from below and towards the centre of the sea it is found in a liquid state, like petroleum; but it is probably solidified by evaporation, as it is found upon the shores in hard compact masses. The explanation of this phenomenon is that

or between the sea and some internal volca-
sts, whence this substance is ejected.
the vicinity of the Caspian, the Bakoo
gs have yielded large quantities of oil, and
ely celebrated. Some of the Persian
have furnished fifteen hundred barrels a
and throughout this region this material,
the name of Naphtha, is very generally
for its light.

Rangoon, in Burmah, petroleum has been
ed for many years, and at this time there
er five hundred wells, which annually afford
hundred thousand hogsheads. The oil oc-
n a stratum of blue clay; wells about sixty
p are dug, into which the petroleum oozes.
sometimes used in its natural state, but
frequently it is first purified by distillation
team. The raw material is also mixed with
and used as fuel.

urope there are a few abundant springs.
e of the Ionion Islands there is an oil foun-
hich has flowed for over two thousand
and the oracular fires of ancient Greece
een attributed to similar sources. Oil
also occur in Bavaria, in the Grand
of Modena, at Neufchatel, at Clermont
bian in France, and near Amiano in Italy.
om procured from the last named locality
for lighting the city of Genoa, but else-
in Europe it is not employed, to any ex-
an illuminator.

his side of the ocean there is an enormous
y of this substance. Upon the Island of
d, one of the West Indies, at a distance of
urths of a mile from the sea, is a lake of
u three miles in circumference. Near
ks the asphaltum is hard and cold, but as
proach the centre the softness and the
ature increase, until finally it is liquid
ing. From the bubbling mass proceeds
g, sulphurous odour, which is perceptible
tance of ten miles. Between the banks
ke and the shore of the island is an ele-
tract of land, covered with hardened
um, upon which vegetation flourishes.
lanation put forward in connection with
d Sea, is equally applicable in this case.

others of the West Indies petroleum has
tained, as well as at several places in Cen-
d South America; but it is in the
portion of this continent that the
reservoirs of this substance are located;
ems truly wonderful that their extent
ness should not have been discovered at
period. For many years the Seneca
collected petroleum, and, under the name
oil, sold it as a remedy for rheumatic
ls. At numerous places in the Middle
was found in salt borings, and was col-
burnt by the farmers, but it was not
ust, 1859, that it was obtained in notice-
tities. At this time oil was "struck"
Creek, Venango County, Pennsylvania,
by sinking an Artesian well to the depth of seventy feet, and for many weeks a thousand gallons a day were pumped from it. The news of this discovery spread far and wide, and gave rise to an "oil fever." Thousands flocked to this vicinity in the hope of making their fortune. Before the close of 1860 there had been over a thousand wells bored, many of which were productive, but a large proportion returned nothing. Some of the adventurers have been very successful, and have made large amounts of money; but, as in all commercial "fevers," a large number of persons have been utterly impoverished by their speculations. The mere sinking a well by no means insures a bountiful supply of oil. The petroleum is stored in fissures formed by the upheaving of the earth's crust by volcanic action; and these fissures are perpendicular rather than horizontal in tendency, as is proved by the fact that at wells but a few rods apart, the oil is "struck" at very different depths. The lowest parts of the fissures contain water, above which is oil, while in the highest portion there is a quantity of gas. If, therefore, the well strikes the fissure at the lowest part, the water will be forced up by the pressure of the supernatent oil, and gas. Persons ignorant of the formation sink a well at random, and perhaps strike a fissure; but obtaining nothing but water, they abandon the spot as worthless, whereas after removing the water by pumping, a large quantity of oil might be obtained.

In some localities in Ohio, as is the case in Burmah, the ground is saturated with the oil, and wells several feet in diameter are dug, into which the oil oozes, Porous limestone, containing petroleum, is found in some sections of the West, and has been subjected to distillation with profitble results.

In regard to the origin of petroleum, scientific authorities differ; but the theory most generally favoured is, that it is the product of the slow distillation, at low temperatures, of organic matter in the interior of the earth; the vapours being condensed in the previously-mentioned fissures and the surrounding soil. The lake of Trinidad and the bituminous matter of the Dead Sea may also be referred to a similar source. But for how many centuries must this operation have been going on to have effected such enormous results?

Of the many uses to which petroleum and its derivatives are applied, that of illumination is the most important; and the process of refining is extremely simple. The crude material is put into a large iron retort, connected with a coil of iron pipes, surrounded by cold water, called the condenser. Heat is applied to the retort, and from the open extremity of the condenser, a light coloured liquid of strong odour soon flows. This is naphtha, and is very volatile and very explosive. Some refiners mix it with the burning oil, and numerous accidents have resulted from such mer-

cenary indiscretion. It is usually run into a seperate tank. After the naphtha has passed over, the oil used for illumination distills off. Steam is now forced into the retort and the heavy lubricating oil driven over. There now remains a black, oily, tarry matter, sometimes used to grease heavy machinery, and a black coke, employed as fuel. There are, therefore, five substances separated in this operation, but only the first three are of any economic importance.

The naphtha is used as a substitute for turpentine in paints, or by repeated distillations the benzole is separated from it and employed to remove spots from fabrics This, however, is rather a drug in the hands of the refiner.

The burning oil, as it comes from the retort, is of a yellow colour, and in order to remove this, it is placed in a large lead lined cistern, and agitated with about ten per cent. of sulphuric acid After the acid and impurities have subsided the oil is drawn of into another tank and agitated with four per cent. of soda lye. This last operation is to remove any acid remaining with the oil, and also to extract the residue of the colouring matter. In fact it is sometimes employed alone and a very good oil obtained. The oil is now agitated with water to remove the soda lye, and is then ready for consumption. The colourless oil is by no means the most economical, but on the contrary more light is obtained from the yellow article.

The heavy oil is cooled down to 30 degrees Fah. when the paraffine crystallizes out, and is separated from the oil by pressing. It is further purified by another pressing and by alternate agitation, in a melted state, with sulphuric acid and soda lye. It is then moulded into candles. It is a curious fact that the composition of paraffine and good coal gas is exactly the same.

In Egypt a substance derived from petroleum was used in embalming bodies; and in Persia and the neighbouring countries asphaltum is used to cover the roofs of the houses and to coat the boats. In France asphaltic pavements have been successful in several cities, and for the protection of stone no material is better adapted. Mixed with grease the Trinidad asphaltum is applied to the sides of vessels, to prevent the borings of the teredo, and with quicklime it affords an excellent disinfectant. Among the products of the distillation of petroleum are naphthaline and keresolene. The former is the substance from which is obtained aniline, the base of the beautiful colours mauve, magenta, and solferino. The latter has been proposed as a substitute for chloroform and ether. Many other substances have been separated, but as yet none of them have been applied. As this is comparatively a new field many discoveries may be confidently expected in the course of a few years.—*Scientific American.*

Great Oil Spring.

The somewhat celebrated Mr. Shaw of Springs village, is not destined to share the honour and profits of that remarkable cality. Yesterday, Tuesday, the 18th another person, Mr. Bradley by name, has been boring at a spot situated about two dred yards distant from Mr. Shaw's spring having reached to about an equal depth in rock as he attained, was rewarded for his tions by an up-flow of oil to an extent of gallons per minute. There being no mea saving it, it has overflowed the land, as was case with Shaw's spring, when it first flo and a pitible waste is going on. Black C has become literally a sewer for oil, and waters are covered over to a depth of three inches with the dark green fluid, wastes from the surrounding wells and sp The last success of Mr. Bradley was qu known to the men in the district, each of left his well and proceeded to witness the wonder. They saw in astonishment, and ed to their respective lots, each determi bore deeper and deeper until the source of supply should be tapped, and each pos his own right not an oil well merely, but a table oil spring, which should bubble up taneously to the surface.

The fact is, the whole district is impreg with oil. The soil is made viscid by it piece of earth adheres to your boot, and become at once odoriferous and offensive is every where. One tastes it in the beer, even whiskey fails to kill it out. The is detected in the bread. You eat bacon you taste oil. You smell it and taste it air, and hold your nose to lessen its ungra influence upon the olfactories. You get but the sheets are oily. You open a door yonr hand which has touched the hand c ught the contagion. You proceed to and find a film of oil upon the water, and wipe your face, the skin is imbuded by an genous deposit from the towel. Oildom a its sway, and Oil is King?

But the means of transporting the la supply of oil is altogether inadequate t neccessity of the case. Lumbering barr $2 each are behind the age, even if they to be had in sufficient numbers, and it is ative, therefore, that some, new mode of ca away the precious unctuous flow shou adopted. The plan now proposed is, down a five inch iron pipe to Sarnia, and the oil to flow into a common reservoir and from thence to be filled into iron and so conveyed to the seaboard. No or implements once used in this traffic are able for other purposes, as the odour fr oil is so pungent and persistent, that it i itself into every cranny of a ship in wh

·e quantity of it may be conveyed. Not g since a few barrels of oil were taken across Atlantic in a large grain vessel, and the ılt was thus the great portion of the grain spoiled. It is thought, then to press into service, as a kind of retributive justice, the whale ships, for if the supply of the oil con- es, the whales will be left to enjoy their strous gambols undisturbed by the harpoon. pess from the pursuit of the whale to be the riers of ready-made oil, would not be difficult, ugh decidedly unromantic.

some such plan were adopted, this natural well, if the supply continues, become one of most useful and economical substances wn, and will find its way into hundreds of . Already such experiments have been e as to convey the conviction that gas of a rior kind can be made from it at sixty cents thousand feet, while for the ordinary pur- es of light, the supply being so plentiful and arently unlimited, the illuminating fluid now must fall in price to such an extent as to e artificial light, to use a vulgar phrase "as ap as daylight." From whatever point this ject is viewed, whether as regards the origin he oil; its supply; the extent of country er which it is found: the uses to which it can applied; the revolution it is making in the of artificial light, in each and all it is most derful, and we question if a more interesting than that of the Canadian Oil Springs at ming exists in any part of the world.—*Lon- Free Press.*

HE LAND OF PARADOX.—The quicksilver, I will sometimes disappear, like the water in pipe of the Great Geyser, and even then the ther will be tolerable. But that is as it ld be, and quite in keeping with the regions radox which we are approaching, where the ıet forgets its affection for the pole; where any as nine suns have been seen in winter ost affording the warmth of one; where the rite time for thunder and lightning is mid- ; where a river of to-day becomes a mere tain of to-morrow, and *vice versa*, where ds rise out of the ocean, and sink down , as if nothing had happened; where tiny ds, according to the testimony of veracious llers, at times swoop down like falcons on the of the wayfarer and disorder his brains. A out of which is dug that mysterious surtur- which geologists have been addling their s to explain the origin of, but in vain; a where the people get their wood from the and where ocean cod are taken in inland ; where, if you find a stalactite, it is due to instead of water; where dark ducks with rings round their eyes swim in the boiling s—and where ice and fire are often on the ms with each other. So that fine weather low glass are really quite the correct —*The Oxonian in Iceland.*

A PLACE WHERE NO WINTER IS.—The exceptional warmth of the winter climate of Mentone, even for the Riviera, is proved by the presence of groves of large, healthy lemon trees, which occupy the sheltered ravines and warmer hillsides, wherever water can be obtained, constant irrigation, summer and winter, being necessary for their cultivation. They are, indeed, much more numerous than the orange trees, although many fine plantations of the latter are found throughout the district. Orange trees can bear without injury several degress of frost, whereas one degree destroys the fruit of the lemon tree, and two or three degrees destroy the tree itself. On one side of the second bay, near the Port St. Louis, the warmest and most sheltered region of Mentone, the side of the mountain is partially covered with lemon trees, which ascend on terraces to a considerable height above the sea. In these "warm terraces' winter certainly may be said not to exist. Throughout its entire duration insect life is abundant, and the swallows consequently never migrate. They are constantly seen arching among the rocks. The harebell, the red valerian, violets, and our own pretty veronica, flower in December and January in this favoured spot, long before they appear elsewhere. The lemons produced at Mentone are known throughout northern Europe, and fetch a high price in the market. The lemon tree at Mentone flowers all the year round, never resting, and bears four distinct fruit crops. Its existence in groves of large trees, from twenty to thirty or more years old, without artificial protection, and its profitable cultivation throughout the year, prove that there must have been freedom from frost for many years I was told, however, that about twenty-five years ago nearly all the lemon trees in the country were destroyed in one night, which may account for no very old trees being seen.—*Mentone and the Riviera as a Winter Climate; by J.H. Bennet, M.D.*

THE MOTH'S WING.—Touch with a camel's-hair brush any part of the wing, so as to remove scales, dab the brush on a pane of glass, put it under the microscope, and then see how each particle of the almost imperceptible and impalpable coloured dust which clothes the wings becomes manifest as an elegantly formed scale, sculptured with designs of singular beauty and regularity, formed of at least two, if not three separate membranes, and waved, toothed, or fringed at the extremity, according to its position on the wing. Just consider how many hundreds of thousands of these scales are needed to cover a surface so great, and the inconceivable care which is required, not only in making them, but in setting them in rows more regular than the slates on a house-top, each overlapping the other, and arranged so as to defend the delicate membrane of the wing from moisture. You cannot wet a moth's wing with water, for it runs of in drops as if the wings were covered with oil.—*St, James's Magazine,*

The Poet Laureate and the Late Prince Consort.

A new edition of the *Idylls of the King* contains the following dedication :—

These to his memory—since he held them dear,
Perchance as finding there, unconsciously,
Some image of himself—I dedicate,
I dedicate, I consecrate, with tears.
These Idylls,

And, indeed, he seems to me
Scare any other than my own ideal knight,
Who reverenced his conscience as his king;
Whose glory was redressing human wrong;
Who spake no slander—no, nor listened to it;
Who loved one only; and who clave to her—
Her, over all whose realms to their last isle,
Commingled with the gloom of eminent war,
The shadow of his loss moved like eclipse,
Darkening the world. We have lost him; he is gone;
We know him now: all narrow jealousies
Are silent; and we see him as he moved,
How, modest, kindly, all-accomplished, wise,
With what sublime repression of himself,
And in what limits, and how tenderly—
Not swaying to this faction or to that;
Not making his high place the lawless perch
Of wing'd ambitions, nor a vantage-ground
For pleasure; but, through all this tract of years,
Wearing the white flower of a blameless life,
Before a thousand peering littlenesses,
In that fierce light which beats upon a throne,
And blackens every blot: for where is he
Who dares foreshadow for an only son
A lovlier life, a more unstain'd than his
Or how should England, dreaming of *his* sons,
Hope more for these than some inheritance
Of such a life, a heart, a mind as thine,
Thou noble Father of her Kings to be—
Laborious for her people and her poor,
Voice in the rich dawn of an ampler day,
Far-sighted summoner of war and waste
To fruitful strifes, and rivalries of peace,
Sweet nature gilded by the gracious gleam
Of letters, dear to Science, dear to Art,
Dear to thy land and ours—a Prince indeed,
Beyond all titles, and a household name,
Hereafter, through all times, Albert the Good?
Break not, O woman's heart, but still endure;
Break not, for thou art Royal, but endure,
Remembering all the beauty of that star
Which shone so close beside thee; that ye made
One light together, but has past and left
The Crown a lonely splendor.

May all love
His love, unseen but felt, o'ershadow thee;
The love of all thy sons encompass thee,
The love of all thy daughters cherish thee,
The love of all thy people comfort thee,
Till God's love set thee at his side again.

VALUE OF A DEAD HORSE IN LONDON.—from 8d. to 1s.: used for haircloth mattrasses crushing seed in oil mills. Hide and tendons leather, glue, gelatine. Flesh, £1 8s.: meat men, dogs, and poultry. Heart and tongue mystery. Intestines: covering sausages and like. Fat, 3s 4d.: used for lamps after distill Bones, 4s. 6d. per cwt.: knife handles, phosp ous, and superphosphate of lime. Hoofs, 8s 10s.: buttons and gelatine. Shoes 2s. to old iron. Total value, from £2 17s. 6d. to 4s. 10d.

Editorial Notices, &c.

PURE SHORT HORN STOCK.—We beg lear direct the attention of breeders of Short H ed Cattle, to the advertisement in another of pure bred cattle for sale by Dr. Phillips Prescott, C. W., the stock being at pr placed for keeping on the opposite side of river, near Ogdensburgh, N. Y. These were exhibited at the London Provincial S last September, where they gained several miums, and although from their recent pa across the Atlantic, and rather poor keepi arrival, they were not in so high conditio they should have been to show to advan they yet attracted the attention of connoi by their good points and evident high bree The cattle are from some of the best her the old country, and have all good herd pedigrees. We understand that private re have induced Dr. Phillips to return to the country to reside, instead of settling p nently in Upper Canada, as was his inte when he imported his cattle, but we trust the stock may remain in the country for th provement of our native herd.

BOARD OF AGRICULTURE.

THE Office of the Board of Agriculture has been removed to 188 King Street West, a few doors from the late location adjoining the Government House. Agriculturists and any others who may be so disposed are invited to call and examine the Library, &c., when convenient.

HUGH C. THOMSON,
Toronto, 1861. *Secretary.*

Notice of Co-Partnership.

THE Undersigned have entered into Partner ship as Seedsmen and dealers in all kinds of Agricultural and Horticultural Implements, under the firm of James Fleming & Co.

JAMES FLEMING,
GEORGE W. BUCKLAND.

NOTICE.

JAMES FLEMING & CO., Seedsmen to the Agricultural Association of Upper Cana da will carry on the above business, wholesale and Retail, at 126 Yonge-st., 4 doors North of Adelaide-street, until next July, when they will remove to the new Agricultural Hall, at the corner of Queen and Yonge-streets.

JAMES FLEMING will continue the business of Retail Seedsman and Florist at his old stand, 350 Yonge-street.

Toronto, January 1st, 1861.

FOR SALE.

AT

WOODHILL, WATERDOWN P. O.

MR. FERGUSSON expects to have several *pure Durham bull calves* to dispose of next Spring, 1862, not intending to raise any this season. These calves will be all of the *well known DUCHESS tribe*, and will be put on the G. W. R. R. at six weeks old for eighty dollars each.

N. B.—Frst come, first served.

Waterdown, Nov. 14, 1861. 4–t.

THOROUGH BRED STOCK FOR SALE.

THE SUBSCBIBER has for Sale Durham and Galloway Cattle, male and female. Leicester, Cotswold, and Lincolnshire Sheep, male and female.

January 1, 1862. JOHN SNELL,
tf. Edmonton, P. O., C. W.

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