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THE CANADA FARMER.

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Agriculture.

New Ideas in Fertilizing.

EDITOR CANADA FARMER Artificial manures have of late become very common, and their uses in most cases have been attended with tolerable success. From the difficulty, however, experienced by the ordinary farmer, either to judge for himself, or to obtain definite information from other sources as to the constituent elements of his land, or the crops produced by it, experiments in the way of detailed or minute fertilizing have always been, and indeed are still to a considerable extent, lotteries. Of course certain general truths have been demonstrated and become fixed through repeated experiments, such, for instance, as that beneficial results will follow the application of one kind of manure to potatoes, another to the grasses, and so on. Research has been carried even further, and the theory promulgated that, as certain crops extract certain elements from the soil, these elements must again be returned to the soil, if its strength would be conserved. But beyond these general truths, now patent to every intelligent agriculturist, the main difficulty yet remained. A crop of turnips, for instance, sown upon A's farm, turned out excellently, while the same quality of seed sown by B, and treated in every respect precisely like A's, proved a comparative failure. What was the reason? Might we not give similar instances in every department of vegetation, and end them in each case with the same query. Now evidently in the supposed case cited, the difference in yield must have arisen from a difference in soil. But here the difficulty again meets us. What was that special difference, and what means has A or B of ascertaining it?—which must force upon every thinking person the conclusion that a knowledge of practical chemistry is absolutely indispensable to the farmer, whose labors would always be crowned with success. It is to the progress made in this direction and to chemical experiments in Great Britain and America that we are mainly indebted for the strides of agriculture even within the past twenty years. All our artificial manures have sprung from chemical research, and in them we have a world of wealth. The agriculturist should be able to analyse his soil and discover in what element, if any, it is deficient. He should be acquainted with the chemical analysis of all kinds of crops and manures, natural and artificial, and thus be enabled to judge not only how and where to sow, but also what special fertilizers, and what quantity of each will ensure success. It is quite possible that a field which grows an enormous crop of oats this season, will do nothing of the kind three years hence, even with the same treatment. Two years ago a field may have contained a decided excess of lime; to day it may be quite deficient in that element. How is the farmer to know it? True, he may guess at it, supply the needful element, and be successful; but after all it is only guess-work with him, and moreover, he is never sure whether or not he is supplying the proper quantity. A few pounds more per acre of his fertilizer might have increased his crop twenty-five per cent.; a few pounds less might have had no appreciable effect whatever. And, worse than all, he might guess wrongly, in which case both his labor and manure would be comparatively lost. It was evidently such views as these that weighed with agricultural chemists the world over, when within a comparatively brief period back, they turned their attention to a more direct and minute method of applying their art in the various departments of vegetation. Professor Stockbridge, of the Massachusetts Agricultural College, appears of late to have taken a new lead in this movement, and if his investigations prove in all cases as successful as the few experiments he has already tried, he shall certainly have conferred a boon on the world generally, and the farmer particularly. The Professor's plan is a novel one. Having selected a field for the purpose of raising, say wheat, he first analyses and determines the exact composition of wheat, straw and all, calculating how much of this, that and the other element is contained in each bushel. He next analyses the soil of his field, observing in what elements of wheat it is deficient, and the amount of that deficiency. His calculations are then made and applied. Suppose he desires to raise forty bushels of wheat to the acre. He applies to each acre of his field enough of the proper fertilizers to contain just the quantity of chemical elements in forty bushels of wheat, deducting of course what amounts of these elements may already be in the soil—and his experiment is complete. The Professor, in brief, claims to demonstrate the fact that worn-out soils

may be rendered fertile and productive by the application of chemical manures. The main principle of his method, which he regards as original, is the determination of the precise quantity and cheapest form of fertilizers required for a given amount of any crop. He gives the formulas and rules whereby every farmer can purchase and apply the manure to whatever crop, within certain limits, he may desire to grow, and he asserts that a fair profit, with increased fertility of soil, may be thus obtained without much regard to the season.

Some of the experiments published have indeed been attended with wonderful results. For instance, to raise fifty bushels of corn, a quantity which, on analysis, he found to contain as much nitrogen as is combined in 320 lbs. sulphate of ammonia; as much potash as in 154 lbs. muriate of potash, and as much phosphoric acid as in 248 lbs. superphosphate of lime, he applied these several fertilizers in the quantities mentioned. The result was a yield of 74 bushels per acre of fully developed, perfect corn, while an adjoining unmanured plot produced only 25½ bushels per acre of inferior grain. "In an experiment with field beans," the Professor says, "we applied as much of the three constituents of plant food as are contained in 20 bushels, with the natural proportion of straw, as follows:

Nitrogen, 53 lbs. Equal to Sulphate ammonia (20 per cent. nitrogen), 265 lbs.
Potash 33 lbs. " " Sulphate potash (35 per cent. of the salt), 93 lbs.
Phosphoric acid, 20 lbs. Equal to Superphosphate lime (13 per cent. soluble acid), 160 lbs.

The variety planted was the common white, oblong bean. The natural yield, as shown on an unmanured plot, was four bushels per acre. The fertilized plot produced 25 bushels per acre."

Many farmers present at the Professor's lectures, expressed their purpose to test his experiments for themselves. In order to the carrying out of this intention, we subjoin the formulas made use of by him in preparing his fertilizers. Column 1 gives the quantity of the crop, including the natural proportion of roots, stalk, leaves, pods, &c., to be produced on a given area in excess of the natural production of the soil. Column 2 gives the proportion in this given quantity of the first element, nitrogen, and 3, the form in which it may be obtained; 4, of the second element potash and either 5 or 6 the form in which it may be obtained; 7 of the phosphoric acid, and 8, the form in which it may be obtained. This is based on the supposition that the superphosphate used contains 13 per cent. of soluble phosphate, but if a reliable Company guarantees a greater or will not guarantee so great a per cent. as this, the quantity of superphosphate must be proportionally diminished or increased. For example, if the guarantee is for 18 per cent., divide the number in column 8 by 18 and multiply by 13. If the farmer make it himself, as recommended by Prof. S., by mixing 50 lbs. of 66 degrees of sulphuric acid with 100 pounds of ground bone, it will contain from 17 to 18 per cent. of soluble phosphate.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|--------------------------------|----------------|----------------------|--------------|---------------------|--------------------|------------------|-----------------|
| CROP. | Nitrogen, lbs. | Sulphate of Ammonia. | Potash, lbs. | Sulphate of Potash. | Muriate of Potash. | Phosphoric Acid. | Superphosphate. |
| 100 bush. Potatoes..... | 21 | 105 | 34 | 225 | | 11 | 85 |
| 25 bush. Oats, 32 lbs to bush. | 23 | 115 | 20 | | 40 | 12 | 90 |
| 50 bush. Indian Corn..... | 64 | 320 | 77 | | 154 | 31 | 248 |
| 20 bush. Beans..... | 53 | 265 | 30 | 198 | | 20 | 160 |
| 25 bush. Buckwheat..... | 37 | 185 | 50 | | 100 | 15 | 105 |
| 20 bush. Winter Rye..... | 25 | 125 | 24 | | 48 | 10 | 128 |
| 25 bush. Wheat..... | 41 | 205 | 24 | | 48 | 20 | 160 |
| 2 tons Corn fodder..... | 20 | 100 | 66 | | 132 | 10 | 123 |
| 100 bush. Ruta Da..... | 11 | 55 | 18 | 118 | | 6 | 63 |
| 100 bush. Beets..... | 11 | 55 | 25 | 155 | | 6 | 50 |
| 100 bush. Onions..... | 11 | 55 | 0 | 54 | | 4 | 32 |
| 1 ton Green Cabbage..... | 23 | 140 | 12 | 75 | | 4 | 32 |

These and other experiments which the Professor promises to publish, from time to time, we need scarcely say, will be watched with great interest. If successful in producing what he claims for them, they will certainly have opened up a new field in the domain of agriculture, and conferred lasting honor and gratitude on their discoverer.
N. B.

Not Fancies but Facts.

The first of the following letters came too late for our February issue. We took occasion in the interval, however, to submit it to the writer of "Leaves from Farming Experience," and we now subjoin the reply as well. They are as follows:

EDITOR CANADA FARMER:—I have just received and

read with much pleasure the first number of the CANADA FARMER for the present year. Will you allow me to ask, through you, the writer of "Leaves from Farming Experience.—No. 4," if the quantity of crops and the prices given are those he has realized during his lengthened experience; for, to some, they look more like a fancy picture of what might be realized, were every season fruitful, and every crop abundant, and were there no drawback from bad harvests, wet or dry seasons, frost, insects, rust, mildew, or many other of the numerous accidents from which even the best managed farms are not exempt?
Cobourg. W. R.

REPLY:—I received yours of the 9th current, asking if the quantities of crops and prices realized were real or only fancy, as stated in the "Leaves from Farming Experience." Since I began to cultivate and manure the soil, as stated in these leaves of experience, the quantities were rather over, than under, what is stated. I had no poor crop during fifteen years. Mother earth is generous, if well treated.

Sometimes hay and oats were far above the quantities as I have stated them. I believe the average price of good, clean wheat has been something over \$1.10 per bushel. Peas are low at 70 cents; hay has been selling from 15 to 20 dollars a case many years; turnips bring 40 to 50 cents; I value them at 7 cents. I bought all the crop from myself at the prices stated, and converted it into cheese, butter, beef and pork, as you will see in the leaves not yet published. All is real, and has been tested many years. Greater things than these will be done in Ontario soon; but I am too old to enter upon them, being in my 81st year. I shall be glad to give any explanation.

JOHN ROBERTSON.

P S—I would like some one to give a detailed account of working 1 or 10 acres, the rent, disposing of the crop, profit or loss, &c.
J. R.

Profitable Farming on New Land.

EDITOR CANADA FARMER.—Having some time at my disposal this pleasant winter day, I don't know how I can better employ it than in compiling a few thoughts for the FARMER, both for my own amusement, and in the hope that the observations of an almost uninterrupted practical experience of fifty years in England, the United States and Canada, may set others to exercising their powers of thought in the direction indicated.

During my extensive connection with agriculture in England, from the commencement of this century till 1855, I experienced the great value of the old grass land which remains permanently unbroken, and, on coming to this continent, was surprised to find not only that none of the magnificent natural pastures of Kentucky were reserved, excepting in a very few instances, but that, in the States generally, as soon as the stumps are out of the way, no matter how well stock may thrive on the grass, it is ploughed up, and as some express it, is subdued; and advertisements will be seen where it is stated that the farm for sale has been thoroughly subdued, as if that was a great inducement to buy it. Wherever the soil is naturally favorable for the growth of the best native grasses, it would be a great gain to every farm to reserve the portion most convenient for pastures, and, though it is never done in America, some of the old established grass fields can be mowed; for the hay is better for many purposes than clover or timothy, and it is extraordinary, when the London market in England is supplied chiefly by this old meadow hay, and when the whole of the race horses, and the fox-hunting horses all over the country, by hundreds of thousands, never eat other hay while in their work, that Americans do not understand the value of genuine old grass fields for grazing and for mowing too.

Genuine is the word to express that it is not what farmers in the States call permanent meadows, as they only mean timothy, which is ploughed and re-seeded every few years; whereas, if any of the real old natural grass land is ploughed, it would take 20 years to re-establish the varieties which are essential to the welfare and value of the sward, and which are destroyed by the ploughing and cultivation of the soil. All the dairy cows in England are grazed on the old grass land, and the best cheese made

would lose the quality, if the cows were put into fields of grass which had been recently sown with temporary varieties. The best beef and mutton sold in the summer and autumn, is fattened on the old pastures. Now, as in Canada, as well as in the Western States, there are a set of men running over the soil, taking all the rich fertility from the virgin soil, it is time some of the intelligent and wealthy of the population should endeavor to arrest this wholesale devastation, which could be done by capitalists, and, at the same time, give them a safe and more remunerating interest.

The present custom is to crop with wheat and corn, and make no attempt whatever to replace the fertility extracted, and when owners have had the first heavy yields, they rent on shares to poor men who take out all that is left worth ploughing and sowing for, and then fresh fields are sought by the tenant farmers, who often buy further west, and so on upon the same system, and thus the country is all run over; whereas, if the first owners were men of enlightened views, they would have kept half the land in grass, and have raised cattle and sheep, thereby making manure to return the land, and selling beef, mutton and wool. They would also have saved a nice field near the homestead as a dairy field, and thus, with stock raising, wool-growing and dairying combined, the run attending the growth of corn and grain alone would have been averted, and the yield would have remained as good as at first, because straw would have been converted into manure.

Walkerville, Ont.

G. G.

Live Hedges.

EDITOR CANADA FARMER.—The heavy expense of building fences, whether of rails or boards, together with the increasing scarcity of materials, will soon render it necessary for the farmers of Ontario to turn their attention to live hedges, which, if once planted and trimmed as they ought to be, will, with proper pruning, last for an indefinite length of time and be much cheaper in the end than rail or board fences. Beech or white cedar will form good fences for the purposes of windbreaks wherever the young trees can be obtained, although until they have attained a good size, they can be readily penetrated by cattle accustomed to roam through the woods. But the Hawthorn, Bark Thorn, or Thorny Locust is better. The Hawthorn can



Fig 1—Assorted Plants not cut back

be raised from the seed or haws; the others can be obtained from the nursery men. Of these, we can have nothing better than the White, or Hawthorn. I have never heard of their being girdled by mice, neither, so far as I can learn, is the Bark Thorn, a native Canadian Hawthorn, which may be found growing plentifully in some parts of the country, and haws obtained from them. The Hawthorn belongs to the Rose family, order Rosaceae, of which there are three sub-families, the Almond, the Rose, and the Pear. These are divided into several genera, and these again into different species. The Hawthorn belongs to the Pyrus sub-family, of which there are several genera. Of the species Hawthorn (*Crataegus*), Prof. Gray has enumerated six varieties, but the English Hawthorn, or White Thorn, *Crataegus Oxyacantha*, is the only one which needs to be treated of for our present purpose, as it does not sucker, whereas the Buck Thorn, (*Rhamnus Cathartica*) and the Thorny Locust are very prone to sucker; besides, the Thorny Locust is liable to be winter-killed the first year, but when it is grown, and kept well trimmed twice a year, it makes an excellent fence, a fine specimen of which may be seen on the grounds of George Williams Esq., of Owen Sound.

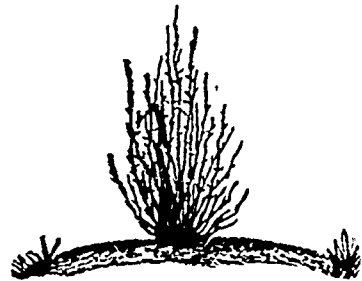


Fig. 2—End View of Young Hedge well Cultivated

Fine specimens of White Thorn fences may be seen in the Townships of Collingwood, and Egremont, in the County of Grey, and in several other Townships in Ontario. I have seen a White Thorn fence in the vicinity of Quebec, trimmed square on the sides and flat on the top, and, as might be expected, the lower branches had withered away so that, although they would turn cattle, yet flat stones set on edge or short pieces of boards had to be used to prevent pigs or poultry from getting through.

This was on the north side of the city, but along the roads leading to the westward, miles of those fences may be seen which have been allowed to grow too high, so that they are not pig-proof. The failures in raising live hedges are owing to one or more of the following causes, frequently to all of these combined:

1. Bad preparation of the soil, which is soddy or cloddy, or otherwise badly pulverized.
2. Bad selection of plants—intermixing large and small, half-dead and vigorous—resulting in inequalities and gaps.
3. Want of the constant cultivation of a broad strip of mellow soil, at least four or five feet wide on each side of the hedge row, for the first three or four years at least, without which the growth will be slow and feeble, when it should be strong and vigorous.
4. Absence of thorough underdraining along the line of the hedge, without which the plants are lifted out by frost when young, or killed by severe winters when older.
5. Neglect of properly cutting back the hedge while forming, to give it a thick or dense bottom.
6. Want of good pruning, which may be entire neglect, or a broad, flat top and thin bottom



Fig 3—Successful Hedge.

A few additional remarks will be proper on some of these points. If the soil is well prepared, the young trees may be planted not only three times as fast if badly pulverized, but they will be more certain to grow uniformly, and form a good and early hedge. Selecting and assorting plants is of great importance in preserving an even, uninterrupted and uniform barrier. The plants, before setting out, should be carefully assorted into two or three sizes, and all which are not plump, healthy, and with good roots and well-formed buds, should be laid aside and tried another season in the seed bed. Let all the large ones be set in the row together, and the same care be observed with the medium and small ones (fig. 1).

Those which are quite small should be kept in the seed bed for another year, especially if the roots are imperfect. We need scarcely add anything on the importance of cultivation to those who know that young trees as well as a row of corn, cannot flourish or make any growth without the soil is well cultivated. The difficulty with too many is that they cultivate a strip much too narrow or only two or three feet entire width, when it ought to be not less than eight or ten feet wide. Young trees send off roots on each side about as far as the height of the tree, and a young hedge, the shoots of which grow four or five feet high, will therefore have an extent of roots from tip to tip of not less than 8 or 10 feet, the whole surface above which should be kept clean and mellow (fig. 2).



Fig. 4—Hedge open at the Bottom.

If the soil is rich, the cultivation may be suspended after midsummer, to allow the new wood to ripen. Planting the hedge row within a few feet of a good tile drain, is an excellent practice, unless the subsoil has so good a natural drainage that water will not stand twenty-four hours in a post-hole on the wettest day in spring. This thorough drain not only prevents the young plants from being thrown out by frost, but contributes greatly to the hardiness of the trees in subsequent years. We have known hedges to endure the severest winters when placed over or near a tile drain, while others, similarly situated, but without drainage, were killed down to the ground. There is nothing that is more difficult than to induce novices to cut back the plants sufficiently. When planted, they should be set in two rows, or better still, in four, and should be headed down within an inch or two of the ground, which will make the new shoots spring up vigorously, while without it, the growth will be comparatively feeble.

When the plants are fairly started, they should be left to grow about two years undisturbed—in rich soils one may do so that they may become strong and obtain a good foothold in the soil. The process of bending down should then commence, and be continued twice a year, until the hedge is formed, which will be in two or three years more. The first cutting back should be within three inches of the ground; the next, three or four inches above

that; the next, four or five inches higher, and so on, increasing gradually for each successive cutting. This cutting back is commonly neglected, and the plants run up in a slender and meagre form, thin at the bottom and heavy at



Fig. 5—The same "Laid," or Prostrated by Cutting the Stem half off near the Ground.

the top. In order to keep the hedge thick below, the common error should be avoided of shearing broad and flat at the top, which leaves the bottom meagre and open. It should also be shaped to a sharp edge or peak, like fig. 3, which represents a perfect and successful hedge.

It happens fortunately that hedge rows which have been thus neglected may still, by proper management, be made into good barriers. Twelve years ago we had an orange hedge set out on a tenant farm too far off for proper superintendence. A tile drain was placed within a few feet, but the occupant could not be induced to cut the trees back sufficiently. He thought it looked like "ruin" to cut down young trees which had grown five or six feet high, to within as many inches of the ground; and, although in a few years it formed a good fence against cattle, it had numerous gaps below, and would not exclude small animals, (Fig. 1). A year ago it had grown about ten feet high when we directed it to be laid. This was done by one person taking a sharp axe and cutting the stems—which were now about an inch and a half in diameter—one-half off, as near to the ground as practicable.

When this was done, another person with a pitchfork bent the trees over in an inclined and nearly prostrate position, in an accurate line along the hedge row, (fig. 5).

If the branches of any of the trees were too broad, they were clipped or cut off with the axe. When this operation was completed, a new hedge had been formed consisting of the inclined trees, which should form an angle of about



Fig. 6—The Same after One Year's Growth.

thirty degrees with the horizon. The operator should wear stout leather gloves. In the course of the season new shoots will spring up from the stubs and stems, and grow several feet high, and thus interlacing the old stems and branches, will form a new hedge, (fig. 6) of such strength that the most furious bull cannot enter it.

It is important that the cutting back be done quite early in spring, and before the buds have begun to expand. If left until later, or after growth has commenced, or when the buds are opening, a serious check will be given to the trees, and they will make but few and feeble shoots. The course just described is well adapted to a farm hedge, and has the advantage that it continues to be a good barrier even immediately after the cutting down has been performed. Another mode of renewing an old hedge is to cut the trees down within a few inches of the ground, and thus allow an entirely new growth to spring up; a year or two being thus required for the new hedge to form, it is not so well adapted to general purposes, but is well suited to door-yard boundaries, as a neater growth may be thus obtained by the removal of all the old brush. If the cutting down is done early in spring, this second growth will be strong and rapid, and the new hedge may be made in less time than by setting out young plants.

Salt and Plaster.

EDITOR CANADA FARMER:—Will you be kind enough to tell me if salt alone is good for wheat or barley, and if so, the best time to sow it, and how much to the acre? Also, is plaster good to sow alone on meadow land, of one-half clover and the other timothy? My land is a sandy loam.

J. O.

Uxbridge.

The merits of salt alone, as a fertilizer, have been variously estimated both at home and abroad. In England, Mr. Lawes of Rothamstead, after experimenting on the subject for over thirteen years, considered the results too trifling to warrant the labor and expense of application. The experience of not a few Canadian farmers, on the other hand has been quite different from that of Mr. Lawes. This can be partly accounted for by the comparative saline differences in the atmospheres of both countries; very possibly that of England is already sufficiently saturated for the purposes of vegetation. It is claimed for salt in this country that it retains moisture, prevents rust, stiffens

the straw, and increases the weight of grain crops. It should be sown broadcast; if for spring wheat, late in the fall, on land newly ploughed; if for fall wheat, immediately before the crop is sown. The quantity may vary from two or three hundredweights per acre, upwards. Salt alone, however, our correspondent should remember, may not prove nearly so effective as if composted with barnyard and other manures. In fact this latter is the best, and, at the same time, the most profitable method of applying it. About one ton of salt to twenty of manure is the right proportion.

Plaster is a most excellent application for the purpose mentioned. It is superior to salt because it possesses all the good qualities of that condiment (and several others) in a much higher degree. It acts, in fact, as a direct stimulant to vegetation. A simple example will illustrate this strikingly. During the progress of a flunderstorm, for instance, large quantities of the nitrate of ammonia, one of our most valuable manurial elements, are being formed and given off in the air. This compound falling into the soil, is speedily changed into a carbonate of the same element. But carbonate of ammonia is volatile; it evaporates readily; the soil cannot retain it, unless something else has been previously deposited there that will seize upon and hold it as it falls. Now this latter is just what plaster does. Being itself a sulphate of lime, as soon as it comes in contact with the carbonate, a chemical interchange takes place, and the result is, on the one hand, carbonate of lime, a fixed and valuable manure in itself, and, on the other, sulphate of ammonia, also fixed, and still more valuable. Sow plaster therefore, just before a thunder-storm, and the effects will be marked.

Triticum Japon.

Couch Grass, Quitch Grass, Dog Grass, Quack Grass.

This species of grass, known by so many and various names, causes a united howl of execration from the farmers of the United States, nor is the British farmer behind his American brother in the heartiness of his malediction. It is considered one of the worst pests to the farmer, because of its tendency to spread so rapidly and maintain its life by means of its *rhizoma*, by which means it takes complete possession of the soil; and if a single joint of the *rhizoma* becomes detached, it only furnishes the germ for another plant, instead of injuring the original plant. This peculiarity is one of the causes of the more rapid spreading of the grass, and so while, as in the case of most grasses, the ordinary cultivation of most crops causes their destruction, it appears in the case of this grass only to encourage its more vigorous growth. Therefore corn, rye, oats, wheat, and in fact all grains are very much injured by it.

Notwithstanding the great objections to this grass, it is said to have some redeeming qualities. Its creeping stems are succulent, sweet and very nutritious, and are greedily devoured by horses and cattle. In the South of Europe it is said that the peasants collect them and take them to the market towns as horse food. They contain three times the amount of nourishment that the stems and leaves do. The flavor is similar to liquorice root, and it has been said by Wethering that "when dried and ground to meal they have been made into bread in years of scarcity," adding "that the juice of them drank liberally, is recommended in obstructions of the viscera, particularly in the case of scirrhous liver and jaundice." It promotes vomiting and may produce other specific effects. It is excellent for binding steep sloping banks, its *rhizomas* interlacing so effectually. It makes a very good hay, but does not yield much of a burden, hence in pastures and permanent meadows it is not wholly objectionable.

Notwithstanding some redeeming qualities which this grass may possess, they are insufficient to insure any favor from the thrifty farmer, and instead of attempting to encourage its growth, the disposition is to effect its entire eradication so far as possible. There is no doubt but that all its medicinal qualities can be more easily obtained from other and more reliable sources; and so far as its profit to the poor about Naples is concerned, it is very questionable whether the poor of this country will ever adopt the collection of its branching *rhizoma* for cattle food as a means of obtaining a livelihood so long as other means are at hand; hence its destruction must be insisted upon as a necessity in cultivation.

How to accomplish this best is the question most interesting to the farmer. There is a possibility that very careful ploughing, whereby every particle of root would be fully buried beneath the soil, might accomplish the object; but when it is considered that there is little probability that such a state of affairs will exist, and then, when by subsequent cultivation, many of the broken *rhizomas* will be brought to the surface, the chances are that the grass will only be more firmly rooted. The method employed by Mr. David N. Clark, of Milford, Conn., proving successful, is believed to be not only worthy of being mentioned but of being followed in practice. Mr. Clark had several fields close to his dwelling that were thoroughly infested with couch grass. This he was determined to remove, and the thought was parent to the act. In all that Mr. Clark undertook he was thorough; he had tried the method of cultivation with ill effects, therefore as early in the spring as the season would admit, he thoroughly ploughed his field, and as soon as it was sufficiently dry, he put the harrow upon it and worked it over as thoroughly as possible and then went over the field and picked up every particle of root or *rhizoma* that he could discover or bring to the surface with hoe or manure fork, all of which he accumulated in a pile to dry. In a little time the whole operation from ploughing to the strict search for roots, &c., was repeated. In fact all the spare time that could be obtained was employed in this labor, and when sufficiently dried, the terrible pest was destroyed by fire. So the labor is continued through the season; in this way Mr. Clark was and ever has been successful. It is true it required much time and labor, and this is believed to be a necessity for the total annihilation of this much despised grass.

To go over a field of considerable size with hoe or manure fork, digging over every inch of ground is a slow, tedious process, but besides the object sought there is some gain, as has been proven in the case of Mr. Clark. This thorough pulverizing of the soil effected by the necessary labor of removing the couch grass, fits it in the best possible manner for the cultivation of a crop the next year. Another point is gained; if before the treatment the field was in any way inclined to be foul from the accumulation of the seeds of weeds, it will be rendered perfectly clean, as was the case in the fall with a field that had been under treatment through the summer of 1873.

Therefore, besides being fitted mechanically for the reception of the seed and the best growth of the plant, it is also prepared to render cultivation much easier, and consequently more effective.

Killing couch grass should be governed by the same principle that governs all farming operations, and which are necessary to success, and that is—thoroughness. Very much labor is wholly lost because it is not sufficiently thorough.

The most successful farmers are discovering this, and in place of attempting to cultivate more acres than can be worked well, a less number are employed, with more thoroughness and equal or better success.

WILLIAM H. YEOMANS.

Artificial Hay-making.

The proverbial rains of England, Scotland and Ireland, great bugbears to hay-makers, have not been without their effects upon ingenious minds. The latest agricultural novelty we now read of, is an apparatus for drying hay or grass artificially—the invention of a Mr. Gibbs, of Cheshire. It consists of a portable stove constructed of plate-iron and surmounted by a fan, which is driven by a belt from a three-horse power portable steam-engine; the fan draws all the heated air and gases from the coke fire, together with a volume of warmed air, which passes through a chamber surrounding the inner chamber of the stove, and blows the hot current, at a temperature of 400 degrees Fahrenheit or more, in the drier. This resembles in general shape a straw elevator, consisting of a sheet-iron trough 6ft. in breadth, 20ft. long if mounted on wheels as a portable carriage, or 40ft. or 50ft. long, if a fixture. The trough is raised at one end at a low angle; so that hay fed in at the upper end furthest from the stove shall slowly travel to the lower end near the stove—this being assisted by a slow reciprocating motion given to the bottom of the trough. A ridge of triangular section running along the middle of the trough divides it into two almost semi-circular channels, so that the hay passes down in two streams; the hot air issues through two slit apertures, one each side the base of the middle ridge, and for the entire length of the machine; and the hay is kept continually

stirred and lightened up over the hot blast by a number of small iron stirrers cleverly contrived to imitate the action of forks worked by hand.

By means of this machine wet hay is dried at once, and spoiled and musty hay, after going through the mill, comes out dry and fragrant. Freshly cut grass too, drenched with a trauder-shower, is run through and comes out ready for stacking.

The cost of fuel required for each ton is about \$1.75, and the saving is estimated in England at from \$8 to \$20 per ton. The whole machine fitted up and ready for use costs somewhere in the neighborhood of \$800—a pretty large sum, but considered a paying one where such immense damage is caused by rains.

Leaves from Farming Experience. - No. 6.

Crops, Feed and Manures.

A ton of dung of average quality, moderately cared for, will contain nitrogen 13½ lbs.; soluble salts of phosphoric acid, 5½ lbs.; insoluble phosphates like bones, 13½ lbs.; potash 11 lbs. I believe Canada can raise twice the weight of grain and hay from the same area, and much more than twice the weight of butter and cheese that it does; as I trust to show you, before I have done. A good cow, well fed, will give from 7-400 pounds to 8000 pounds of milk; and twenty pounds of milk will give 2 pounds of cheese; or 1 lb. of butter and 1½ pounds of skim-milk cheese. A cow's food in winter should be about as follows:—

| | |
|--|---------|
| 215 days at 23 pounds hay daily, 3 tons at \$12 | 26 00 |
| 165 of these days at 2 pounds peas, -5½ bushels at 70 cents. | 3 85 |
| 165 of these days at 6 pounds turnips, -29 bush. at 40 cents. | 11 00 |
| 150 of these days at 25 pounds turnips, -75 bush. at 7 cents. | 5 25 |
| Summer 150 days green rye, corn and clover, -100 lb each | 8 00 |
| 2 pounds ground peascal, -5 bush. at 70 cents, the grain all ground fine, and steeped. | 3 50 |
| | \$68 20 |
| | 264 |

Cost of food of 64 cows. \$4361 80

| PRODUCED | USFD. | SPARE PRODUCE AFTER FEEDING. |
|-----------------------------------|-------------------------------------|---------------------------------|
| Hay, 210 tons | 192 tons..... | 18 tons, at \$12 00 = \$ 216 00 |
| Oats, 2800 bus. | 1643 bus | 1130 bus, " 60 40 = 454 40 |
| Peas, 462 " | 415 " " | 14 " " 60 70 = 9 80 |
| Turnips, 1000 " | 4700 " " | 290 " " 60 7 = 14 00 |
| Potatoes, 540 " | 4700 " " | 290 " " 60 35 = 18 00 |
| Wheat, 900 b. at \$1 10, \$900. | Wheat straw, 50 tons at \$4, \$2100 | 1110 00 |
| Oat-straw, 60 tons at \$5, \$300. | Pea-straw, 20 tons at \$8, \$160 | 460 00 |

Spare Produce after feeding 64 Cows \$2153 20

The pea straw will be cut and mixed with the hay, which will leave about 14 tons more hay, to feed more stock; so that you may have enough of manure to give about 18 tons per acre every 4 years. I reckon a ton of manure to be the heaped fill of a Scotch cart. I divide that into ten heaps from the cart, 6 by 5 yds. apart; the manure should be turned over, if possible, until nearly dry; the water is of no use, and is more than half the labour for men and horses. All the bedding should be cut fine for the cattle; much of it may be dried and used many times; also in summer, when using dry earth for bedding, it should be dried after being used not less than three times; it is then nearly equal to guano. Mix a little plaster, about 50 lbs. to two cart loads; spread that on one acre of new cut grass land and it will pay; or spread it on poor places of wheat. It must be kept dry until spread. I manure the corn land for soiling, and turnips; also the potatoes in spring. The rye gets some when sown in September. All are top-dressed, the hay is manured in the autumn the second year and topdressed every year. When all straw is cut half inches long, there is no trouble in raking, ploughing, or harrowing. I have had fields of hay that showed no failure in ten years, when treated in this manner. From all experience, lime is absolutely necessary to the proper treatment of the soil. I have known 8 bushels of quick-lime used yearly per acre, in Perthshire, 60 years ago; farmers used from 50 to 100 bushels lime, per acre, every ten years; there were no bones, guano, or any artificial manures heard of, unless common salt, and the taxes raised it, from about one shilling, to 15 shillings per bushel, which stopped its use as manure. I have only limed two fields of 10 acres each, and part of another, with decided advantage. I laid on 36 bushels of good quick-lime per acre, this way:—

"The field may be fallow, or the crops newly taken off. Scuffle or harrow the ground until soft; if there are much stubble or roots, burn it. Make ridge furrows at 6 yards, and cross furrows at 5½ yards, making 33 yards in each division. Put one peck of quick-lime in each piece. The dew and air will soon slako it, or it may be helped with a very little water. Spread quickly, and harrow a number of times. This is far the best and easiest way I have seen tried. I need not instruct you much about lime, only, I

may state that four crops, turnips, barley, hay and clover, wheat and straw, will take off a field 160 to 180 pounds per acre in three years. Lime and potash dissolve many minerals; change some acids from being hurtful to be useful; and along with salt and potash, form silica of useless sand, to stiffen straw, and form clear heavy grain.

Potash appears to be the leading manure; lime next, then soda, then sulphuric acid, and phosphoric acid, alumina, magnesia, and chlorine. Alumina is abundant in clay. Apply that if your land is sandy. There is magnesia in many samples of lime, but not in all. If required, a bushel of cement or water-lime per acre, will supply it 7 or eight years. Soda and chlorine make common salt. I found the sulphate ammonia a very important manure; it was used from 25 pounds to 100 pounds, per acre, on grain, grass and roots. I got it from Liverpool at a cost, in Montreal, of 100 dollars per ton

Bell's Corners, Ont. JOHN ROBERTSON
(To be continued next month.)

Raising Oats.

A correspondent of the Rural World writes:—If ground runs together, as most clay ridge land does, I plough in the fall, when there is the most grass, weeds and trash on the ground. I use a plough that don't quite turn the furrow clear over, so that there is a little grass and trash between each furrow that does not decay, and that keeps the ground from baking. Then as soon in the spring as possible, usually in March, I sow my oats on top of the ground, ploughed as I have stated, and take a one horse turning plough, and plough them under to the depth of about three inches. I am careful not to plough too close, in order that I may leave the ground in small ridges. I leave the land in this condition until I think the spring rains are over, for, unless it has been very wet, the ground will not be quite level, although the oats may be up four to six inches in length

I then take a sharp harrow and thoroughly harrow them, and then roll. Then I expect that ground, treated in this way, that will not produce fifteen bushels of corn, will produce from thirty to forty bushels of oats. I always sow two bushels on all upland, and the stronger the land the more seed I sow, till I get to four bushels to the acre, which amount I sow where the oats usually fall down. I prefer the Little Black oats. I seldom fail in raising a good crop. I consider that the harrowing is equal in the culture of oats to a ploughing in corn, in raising the latter. On poor ridge land, that will not raise more than six bushels of wheat or fifteen bushels of corn, I get from thirty to forty bushels of oats. My theory is, that if you can sow oats thick enough, so that they will not grow more than one foot high, then why not sow them just so thick that they will get just high enough? All who have a better way should keep on, but all who have not, should try my plan

Guano vs. Nitrate of Soda.

Mr Lawes of Rothamstead, England, has been experimenting with both these fertilizers, and publishes the results in an appendix to his annual circular for 1875. He says: A field of 18 acres, which had grown during the three previous years a crop of wheat and two crops of barley (the manure each year being a mixture of nitrate of soda and superphosphate), was divided into three parts last spring, and was again sown with barley. On one part the manure used was nitrate of soda and superphosphate; on another nitrate of soda and Peruvian guano; on the third, Peruvian guano alone. The cost of the manure per acre was nearly the same. The following was the produce obtained:—

| | Bushels per acre | Weight per bush in lb | Straw in cwt. |
|----------------------------|------------------|-----------------------|---------------|
| Nitrate and Superphosphate | 23 | 54 | 22 |
| Nitrate and Guano | 33 | 53 | 21 |
| Guano alone | 23 | 55 | 23 |

It will be observed that, while the nitrate with superphosphate or with guano gave very similar amounts of produce, the guano alone gave 10 bushels per acre less. Last season was a very unfavorable one for high manuring, as will be seen by comparing the produce of barley in the experimental field for the last two years:—

| | Bush | Pecks. |
|--|------|--------|
| 24th year, season 1875—Superphosphate and nitrate, 187 acres | 33 | 3 |
| 23d year, season 1874—Superphosphate and nitrate, per acre | 53 | 3 |

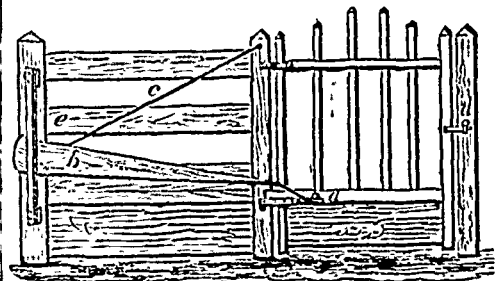
In both fields the produce by the same manure is alike this year, the difference of nearly 2 qrs per acre being due to the unfavorable season of 1875. The guano used in this experiment was fully equal to the best which has been imported into this country for some years, and contained between 12 and 13 per cent of ammonia. The result was by no means favorable to the guano. If, however, the

experiment had been tried with the guano recently imported from the new deposits, it is quite certain that a still worse result would have been obtained. I have seen the analyses of two cargoes of Peruvian guano imported into this country from Pabellon de Pica. The ammonia in each case was below 5 per cent. A farmer who purchases Peruvian guano without guaranteed analysis, and merely because it is called 'genuine' and looks dry, has only himself to blame if his crops do not equal his expectations. Whether he should use guano at all, when he can purchase nitrate of soda at the present price is to me very doubtful.

Self-Closing Gate.

The invention of a durable, reliable self-closing farm gate has been so often tried unsuccessfully, that people's faith is beginning to shake in the probability of such a consummation ever being reached. The main difficulties to be overcome, most commonly, arose from complications in the structure; something or other kept continually getting out of order, and, in brief, the gate and its appliances were very soon voted aside as a failure. The following, which we illustrate in our present number, has at least the quality of simplicity to recommend it. It can moreover be fitted up at the most trifling expense. We extract the cut and description from the American Agriculturist, which says:—

The gate may be of any kind that is hung upon hinges. The device may be applied to single or double gates, and to light or heavy ones, by simply changing the weight of the shutting-bar. The shutting-bar (b) is 5 to 8 feet long, one inch thick, and should be made in the form shown in the engraving, so that the weight will be mostly at the farther end from the gate. The bar is fastened to the gate by a half hinged (a), which should project from the gate two to four inches; the heavier the gate, the farther the hinge should project from it, so as to make the weight



of the bar more effective when the gate is nearly closed. To the lower end there is screwed an iron bolt, in which is a slot two inches long, which gives room for play upon the half-hinge. The bar is fastened to the gate-post by a chain or rope (c), which may be lengthened or shortened at pleasure. A guiding bar (e) is fixed to the fence so as to have play-room of two to three inches, in which the shutting-bar may work up and down freely. The mode of operation is as follows: When the gate is opened, the hinge, which is several inches from the heel-post of the gate, pushes the shutting-bar backwards. As it is held by the cord or chain, it cannot go backwards, but is forced to rise in the space between the guide bar and the fence. The height to which it rises is regulated by the length of the cord or chain. When the gate is released, the weight of the shutting-bar operates at once, and as it is held by the cord, it must push upon the gate so as to close it. A self-operating latch (d) should be used, so as to fasten the gate when it is closed. This device can be used for doors as well as gates, and will be most useful for those people who are afflicted by visitors who have that very common but very annoying habit of leaving gates and doors open as they pass through them.

Time to Sow Grass Seed.

A great many farmers sow their grass seed in the former part of the growing season, as they fancy that time to be a more favorable period than any other, for the reason that it will be better to sow the grass seed with clover seed. If clover seed be sown in autumn the young plants will seldom attain sufficient size to endure the frosts of winter unharmed. As a rule, the best time to sow grass seed is when winter grain is put in. Of course something will depend on the season as to moisture. It is of but little use to sow seed when the ground is as dry as dust, which is sometimes the case. Some farmers who have long practised autumn sowing for grass, considered the whole month of September a suitable season. It is desirable to have the young plants obtain as good a hold upon the soil that they will endure the winter; but so much growth as to form a mat on the surface of the ground tends to attract the field mice and also to kill the grass by what is called "smothering." But in the spring the temptation to

realize an immediate benefit from the land is so strong that many are unwilling to sow grass seed by itself. When sown by itself in spring its growth is more or less checked by weeds. In autumn few weeds start, and the grass gets full possession of the ground, showing the following year a cleaner crop—more free from foul plants—than is usually obtained from spring sowing. Seeding land in early autumn will permit the renewal of the sward without any intermission—that is without the loss of a crop. If the land is ploughed after the hay crop has been taken off and the grass seed sown, a crop of grass may be mowed the following year. When grass seed is sown in early autumn, better sward will usually be obtained than is produced by sowing grass seed with any grain crop in the spring. When grass and grain are sowed together the grain leads in the growth, and if it does well, the grass will be kept in subjection. If the weather is dry for some time before the grain is harvested, the moisture will be drawn from the grass, and the hot sun to which it is exposed after the grain is removed will destroy the little life which remains.

The next question is as to the kind and quantity of grass seed. So far as grass is wanted for hay, and permanent meadow is the object, the best species for this section are timothy or herds-grass (*Phleum pratense*) and Red Top (*Agrostis vulgaris*). A peck of the former and from half a bushel to a bushel (according to cleanness) of the latter may be sown to an acre. It is advisable to sow enough white clover seed to give a "thick bottom" to the crop, and impart an agreeable odor and relish to the hay. A quart or a couple of pounds of seed to the acre will be sufficient. Some people seem to have an idea that grass seed cannot be sown too thick; but those who have closely observed know that many plants on the ground weaken themselves in the struggle for life, many of which die prematurely.

The mixture of seeds, though usually so much paraded as being the result of a critical examination of the sort suitable for varied situations, is too often a quack prescription made by men who could not distinguish one grass from another either in the growing or the dried state. Indeed, with most of the grass formulae it is a mercy that only a tithe of the seed should possess the power of germination.—New York Herald.

Pasturing Meadows.

If I tell you, says a writer to the Ohio Farmer, that pasturing your meadows will make them more productive, you may doubt it. But such is the fact in many cases. It is my experience that this is the only way that very many meadows can be brought to full productiveness. But it must be done in the proper manner and at the right time. Do not pasture your meadows in the spring and expect them to produce a full crop; neither should you pasture off the aftermath too close. Nearly all of my meadows have failed to produce more than half a crop after from five to eight years, and after pasturing them one season, the next year they would produce a full crop. In one particular instance, I rented a meadow to a man for a pasture; it had only produced half a crop of hay for two or more years previous. He put about three times as much stock on it as should have been; it was grazed close to the ground all summer. I concluded that it would not amount to anything for meadow or pasture afterwards, any more, but the next spring it looked so strong and vigorous that I left it alone, and it produced a full crop. I have never seen this accounted for or seen anything in print in reference to it, but have no doubt that the experience of others will coincide with my own. I can account for it only in the following manner: It is a well known fact that many old meadows are so full of worms that they cut nearly all the grass roots off, and in places you can roll the sod back like a fleece of wool. The worms are so near the surface that the crows and the red-headed wood-peckers destroy great quantities of them; the flicker or yellow-hammer mostly lives on them also. If the meadows are tramped all over with farm stock, these worms will all be tramped to death.

SOWING CLOVER SEED.—A correspondent writes to the Ohio Farmer—If you want a good stand of grass, sow plenty of seed. My rule is to sow one bushel of timothy seed on eight acres of land, in the fall when I sow my wheat; then in February or March, when the ground is frozen, sow the same amount of clover seed on the same land. As a general rule, February is the best time to sow; the subsequent thawing and freezing sinks the seed deeper into the ground. Seed sown in February will not come up as soon as that sown in March, for this reason. If you can guess when the last freeze comes in March, and sow then, you will be all right, provided no drought sets in. Some may think that the above amount of seed is too much, especially when they have to buy at present high prices. But it will pay, were the price higher than it is. The more seeds sown, the more plants you obtain. When you obtain a good stand, it will pay for the seed the first season. Be very careful not to pasture closely in the fall. I have known even old pastures to be badly injured in this way. If you want a good winter pasture, take a blue grass field. Take your stock off it, say about the middle of August, and let it grow until it is time to turn off your other pastures. Then turn on the blue grass.

Horticulture.

Fruit Grafting.

After an experience of about twenty years in grafting fruit of nearly all kinds, during which I have been guided not by stereotyped rules laid down in the books, nor yet, in many cases, by the good old-fashioned way of doing things, but by the results of close personal observation and experiment, I believe a brief recapitulation of my modes and methods would prove beneficial—at least it can do no harm—to my brother farmers. Observe then in the first place that I lay no claim to a scientific knowledge of the subject, nor am I prepared to give reasons, further than those dictated by common sense, for my plans. And observe secondly that, while, by the ordinary professional methods of grafting, the success of sixty or seventy stocks out of each hundred is considered very fair, I have never in my experience lost ten per cent in any one season, nor, counting all my experiments in the aggregate, has the loss reached five per cent.

I can perhaps detail my method better by comparison. Professional graftsmen cut their scions in February or early in March, bury them in the ground until May, and then use them. I never cut my scions until May, and in every instance, if possible, I transfer them fresh from the one tree to the other. Professional graftsmen usually cut off two buds to the scion, seldom more. I always take three, believing that there is not sufficient substance in two-budded scions to retain healthy vitality until the graft growth is secured. Professional graftsmen generally bury their scions in the soil before using. I use damp sawdust in preference, whenever I find it inconvenient to graft immediately. I commenced these plans over sixteen years ago, after trifling with all other methods until I concluded them comparative failures; and, whether my experience coincides with scientific notions and theories or no, I care but little, being quite contented with the practical results. From a beginning of simply nothing, I have, in the time mentioned, raised an orchard of something over three hundred trees, many of which bear three, four, and, in some cases, five different kinds of fruit, all of excellent quality and fair quantity. For grafting purposes perhaps there is no other tree superior, in the quality of wood, to the Fallman Sweeting. You can graft on that tree with every chance of success, as many different kinds as you choose.

In cutting scions, from the previous year's growth, of course, I always make it a rule to utilize first that portion growing next the limb, cutting off my three buds; then another portion towards the point in the same manner; but, as I approach the point, if I find that, over and above the three, there are still a few scattered buds left, I leave them all on, that is, the last or point scion is often eight or ten inches long, with sometimes as many as six, seven and even eight buds—and I have always found it to grow best; in fact I could almost always depend on it whatever doubts I might entertain regarding the others.

My scions, having been cut as above, are prepared by making their grafting-ends wedge-shaped, by shaving down the sides from about an inch from the ends, and observing to keep one side of the wedge slightly thinner than the other. I next saw off my stocks—selecting those of about an inch or an inch and a quarter in thickness—and slit them carefully in the centre, just far enough to permit the easy insertion of the scions. The latter are then inserted, one at each side of the stock, with the thickened side of the wedge outwards, and the bark directly in line, or continuous with the inner bark of the stock. I next make a free and thorough use of my wax, closing up the space between the scions, around the scions themselves, and along both sides of the branch as far as it has been split, being particularly careful in this respect to exclude every particle of air; for, of course, if this is not attended to, the whole thing will prove a failure. An excellent article of grafting wax I have made up as follows: one pound beeswax; half a pound resin, and a quarter of a pound of tallow. Heat all together till they are thoroughly melted. Then pour out in a vessel of cold water, and, as soon as the compound is cool enough to handle, pull and work it vigorously until the entire mass is mixed and uniform.

I would here take occasion to say before closing that I entirely differ from the views of "An Old Orchardist" in your May number for 1875. There, the writer advocates the sloping method of inserting scions in opposition to what he terms the "old" or straight method. I have tested both accurately, and my experience certainly leads me to a very different conclusion. By the straight method a continuous margin of bark (the length of the two inclines in the wedge) comes in contact with a similar length of margin in the stock, and consequently the sap or food of the young graft is supplied through an avenue equal to, if not greater, than its entire circumference; while by the slanting plan no such supply of nourishment is, or can be, possible. The only claim the "New" method, so called, can have is, that it is, perhaps a speedier one than the other.

But it is certainly is not such a good or sure one. His idea also about not utilizing bud points are objectionable. I have repeatedly used them six, eight, and even ten inches long.

West Montrose, Ont. ANOTHER OLD ORCHARDIST.

The Onion Family.

There are a good many members of that respectable family so celebrated for fragrance—we mean the Onion tribe. Some of them, of course, are well known and appreciated, as they are very likely to be. Others are not so popular, though perhaps not unworthy of a passing notice.



Fig. 1.—The Leek.

The Leek is very hardy, bearing a good deal of freezing when in the ground, without any injury, and therefore in climates not too severe is allowed to remain in the ground during the winter, to be gathered as needed. In very cold climates it is taken up before winter and pre-



Fig. 2.—Chives.

served in earth, about like celery, though not needing so much protection. The Leek forms no bulb, and the thick stem, which is the part used, must be blanched by earthing up. Culture as for common Onions.

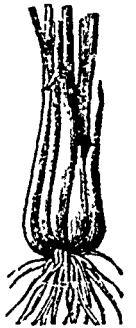


Fig. 3.—Shallot.

Chives is a small and not very important member of the Onion tribe, quite hardy everywhere, and will grow for years from the same bulbs and in the same spot. The leaves are as slender as fine knitting needles, and appear in bunches early in the spring, and are cut and used in

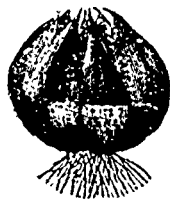


Fig. 4.—Garlic.

the raw state, and may be shorn several times during the spring. It is propagated by divisions of the root.

Shallot are somewhat similar to Chives, but larger and better, the roots being used in the spring before fresh Onions can be obtained. Being quite hardy, they are kept in the ground during the winter, and in the spring one bulb will separate into half-a-dozen or more. They are then taken up, divided, and bought and sold as young

Onions. The Shallot ripens about the middle of summer, and can then be taken up to be planted in the autumn, or retained for winter use.

The most pungent of all the family is the Garlic. The root or bulb is composed of a dozen small bulbs called "cloves." The cloves are planted in the spring six or eight inches apart, and in August the tops will die, when the bulbs are ready to gather. They do best in a light rich soil.—*Fick's Floral Guide.*

PLOUGHING POTATOES UNDER SOIL.—A "Subscriber" writes us: Please give me some information through the FARMER, as to whether it would be advisable to plough potatoes under a clover and a timothy sod of three years standing?

To which we reply that it would, provided the soil is not of an inordinately cohesive or tough texture; and this may generally be estimated from the amount of spear-grass that has mingled with the clover and timothy in the sod. Plant the potatoes in every third furrow, observing to plough that, and all the seed furrows, considerably tighter, that is shallower, than the unplanted ones on either side, in order to obviate the accumulation of too much surface water around the seed. Let the land, after planting, be also harrowed and re-harrowed every few days until the potatoes are up, to pulverize the earth and keep down weeds. And finally, avoid the very common error of planting too deep.

Fashionable Vegetables.

Did you ever hear of such a thing as fashionable vegetables? There are things of that character, if popular prejudices and notions may be regarded as criterions. Seed catalogues and current literature on agricultural subjects help to make certain things fashionable, and then wholesale advertising confirms the fashion quite.

Now there is probably nothing in the color of a tomato to forbid the yellow sorts from being as good as the red; indeed there are some of the former quite superior. But almost all the varieties advertised by the seedsmen are red, and they seem to be all the fashion. The popular sorts everywhere grown, and that all seedsmen advertise, are sure to be red. These are the Tilden, Trophy, Gen. Grant, Excelsior, Canada-Victor, &c. Each has been highly lauded, widely advertised; all are more or less popular, and all are red.

A few years ago the Mercer potato was the leading market potato at the east. It has never been popular here, and we doubt if one farmer in fifty has ever seen one of them. The Peachblow is the leading potato here for winter use. It and the Early-Rose are the only market potatoes. They are the fashion, and for once the caprice of the mode is founded on true merit, for both kinds are unsurpassed in quality in their respective seasons. Probably no two varieties are more widely disseminated or more highly prized all through the country than these two sorts, and we are heartily glad they are the fashion. The variety that shall displace either sort must be a very superior one, for many have been introduced here, but none compete with either.

We have had the Early-Gooderich, the Harrison, Breese's Prolific, Peerless, White-Rose, Garnet-Chili, Prince Albert, &c., but none are fashionable. Although the Peachblow is very late and not remarkably prolific, it is of such uniform quality and good character that consumers will not consent to take others in its stead, no matter how much more cheaply they are produced. The Irish-Cup is of equally good quality, is earlier, and will often escape fall frosts that hurt Peachblows; yields better, and would rival it in market, but for its excessively deep eyes that must forbid its ever becoming popular. The Garnet-Chili, mother of the Early-Rose, often gives a superior crop, equal to the Peachblow in quality, but is not reliable. From all that we know now the Peachblow is destined to reign queen of the potato-market for some time to come.

As an early potato and for use through autumn and to the first of January, we do not know how we would improve the Early-Rose. It will be harder to displace it in public favor than almost any other sort. As a baking potato it is of just the right size and shape. We want no better. We were prejudiced in favor of the old White Pink-Eye, and thought we'd have some for sake of old memories, if nothing more. We grew a few, but on using them found we'd have to sacrifice too much of quality and taste for old memory's sake, if we used them. So we took Early-Rose in preference.

Norway Oats were all the rage here a few years ago; everybody had them. They were fashionable and nothing more—never were liked generally. They were unsupported in their claims to merit and soon went out of fashion, and now "none so poor as to do them honor."

In some things it would be hard to tell what the fashion is. In strawberries of course the Wilson bears away, and among grapes, the Concord is always found. Still there are few places but what something rivals them, and for our part we are pleased to have them surpassed. It is true of these, as it is of many other things, that there's room for improvement, and what is fashionable may not always embrace the desirable points needed for individual purposes.—*Germantown Telegraph.*

Scientific Potato Culture.

Mr. Wm. B. Bateham treats this subject at length and with his usual shrewdness in the *Country Gentleman*. Having given special attention to the kind of exhaustion caused by successive potato cropping, he concludes that potash is most abundantly extracted from the soil, and suggests a plentiful supply of ashes as a renovator and fertilizer. He says:—"The better class of our farmers will no doubt continue to grow potatoes, though probably not so extensively as heretofore; and this crop will doubtless continue to be profitable where the climate and soil are naturally so favourable. But the growers need to learn more of the science of fertilizing the land for this particular crop. They need to study the teachings of agricultural chemistry, as to what elements are taken from the soil with each crop of potatoes, and which of those elements that are essential to the healthy growth of potatoes, are wanting in the soil, and need to be restored by artificial means.

For instance, it is known that about one-half the inorganic elements of the potato—as found in the ashes—consists of potash and about one-quarter soda; and it has been shown by Prof. Johnston and others that every crop of potatoes, say 150 bushels, takes from the soil about 50 pounds of potash and 20 pounds of phosphoric acid, with smaller amounts of soda, magnesia, lime, sulphuric acid, chlorine, &c. Reliance cannot be placed on chemical analyses of the soils to show just which of these elements may be wanting, but a little study and experimenting with different fertilizers, by the farmers, would practically solve the problem.

On most of our old sandy lands, I am convinced that potash is the chief ingredient that is wanting. The past season I manured part of my potato ground with leached ashes pretty freely, adding some that was unleached, and the potatoes on the land thus treated were as plentiful in yield as another part where stable manure was used, and the quality of the tubers (Peachblows) was very much better. It is probable that the good results of the ashes were in part owing to the small portion of phosphorus and lime contained therein, besides the potash. This experiment in this season, when there is general complaint of the poor quality of potatoes, leads me to believe that quality as well as quantity may be greatly affected by the judicious use of fertilizers.

In clayey soils, we are taught by the chemists, there is not often lack of potash, and hence, ashes are not of much use. I am not sure that this applies to clayey lands that have been long cropped with potatoes. But such lands are not usually found suited for this crop.

Speaking next of the quality of the potato, which is not necessarily proportionate to the quantity, and which Prof. Johnston used to estimate according to the relative amount of solid and watery matter contained in the tuber—the quality being enhanced by every increase of solidity—Mr. B. goes on to quote:—"It may be, therefore, that as by growing in unlike soils, or with unequal degrees of rapidity, our potatoes may contain different proportions of water, so by different kinds of fertilizers, which act in the same way as natural differences of soil, and cause the plants to develop with greater or less rapidity, the same effects may be produced. One kind of saline substitute, such as nitrate of soda, by hastening the growth, may give us a crop of potatoes containing much water; while another, such as sulphate of soda, by retarding the growth, may give a crop containing less water, and thus, though there may be no difference in the weight of the two crops, they may be very unlike in the relative proportions of dry food they contain. If such be the case, it is of great practical importance to determine the quantity of water which our several experimental potato crops contain, since, without this, we may draw very incorrect conclusions as to the value of our experimental manures—placing the highest value upon that which gives the greatest weight of raw material, and esteeming least, perhaps, that which produces the greatest weight of dry food." And adds, in conclusion:—"I would specially recommend Prof. Johnston's last sentence above to the attention of all who are experimenting in the production or culture of new varieties of potatoes, as well as those who are testing different manures for this crop.

What I Know About Parsnips—No. 2.

In this condition it should lie for ten days, or until the end of October, when the disturbed soil shall have become thoroughly aerated and pulverized by the early frost. The next operation is to split the ridges as aforesaid, when it will be observed, the ridge is now directly over the first subsoil, and will present a depth of from 15 to 16 inches. In this condition leave it as long as safe from frost, when the subsoil plough is again run up the new formed channels. In this condition it lies till spring, when nothing farther is needed than to drill the seed in as soon as the tops of the ridges are dry enough, which generally happens

days before the frost is out of the ground. However well the ground may be prepared in spring, it cannot equal fall preparation, and the yield will be from 10 to 20 per cent short.

REMARKS:—The double ridging and the subsoiling are just equal to two ploughings. If, the first time of subsoiling, the ground should be hard and stubborn, it is sometimes found necessary to go over it twice, because over this subsoiling is where the roots have to grow.

Note also, the above system is the proper one for all subsoiling. The usual plan for the subsoil to follow the plough, and the plough to follow the subsoil, is an error, for the furrow horse directly treads some of the disturbed subsoil firmly down again, and the plough at once covers the whole, and, before any benefit can be imparted by aeration (the very thing that is so indispensably necessary) subsoiling loses 50 per cent of its value.

I have to add, should no other manure be at command at the ridging time, 300 pounds of bone dust per acre, sown broadcast over the ridges before splitting them the second time, will answer equally as well. If the ground is poor, both dung and bones might be added. Light soil is preferable to stiff, but the parsnip will grow in either with the above preparation.

Sowing and Cultivation.

Generally, ridges so prepared in the fall are in a fit state to sow at the end of March. When the frost is 6 inches out of the ground the tops of ridges begin to dry, and this is the time to drill in the seed. The nearer we follow a law of nature, the better we shall succeed; and, as a rule, nature sows all her seed in the fall, when they undergo the process of freezing and thawing ten times; after which they are packed away in a zero frost, for three months; after which they again many times undergo the process of freezing and thawing. But now in the spring after the freezing thawing, they will begin to grow in a temperature of 10 lower than would have excited them to grow in the fall. Therefore, the earlier we sow our seeds (generally) in the spring the longer they will lie in the ground before growing, and the more vigorous they will grow when the time comes; and then (like all our annual weeds) they never want coaxing and petting, by soaking to make them grow.

These ridges, in the spring, after lying all winter, are so thoroughly pulverised and ground to powder, that man with all his mechanical appliances can but poorly imitate it. The young plant ushered into existence in such favorable circumstances, has but little to do but assimilate that which is already cooked and provided for it, as by a tender nurse. Reverse this by turning all this prepared pap to the bottom, and turn to the surface nothing but raw material which is not fit for the infant plant to feed on, and it sown a little late they often refuse to grow at all, and then it is "confound the bad seedman, and his worse than bad seed."

Sowing, Hoing and Thinning.

The seed being drilled in on the top of the ridges, no roller must be used at this season. But it will be necessary to use a very light steel rake, to pull a little extra earth on to cover the seed; and the rains and snow that will fall after this will sufficiently pack the earth.

The first hoeing should take place as soon as the plants can be seen in the row. The way we do it is to use a thin, narrow and sharp cutting-hoe. The best is one made from an old used-up cradle scythe. This first operation is done by walking backwards, at a half-walking pace up one side of the row at a time, keeping the handle well elevated, so that the earth falls back over the hoe. The earth should not be scraped away from the plant, for unlike the carrot, the parsnip likes to form its crown half an inch below the surface. This first hoeing cleans on each side of the row at least 4 inches, after which the horse-hoe takes charge of the middle. There are two advantages in going backwards in this first hoeing: first, no footstep treads on the young cut up weeds to make them grow again; second, there is great economy in moving the tool only one way, instead of a backward and forward movement at every stroke. Girls or boys can be trained in a few minutes to do this work, as well as men. When the plants are too thick, they can be much reduced by this first hoeing.

The next hoeing, or rather thinning, must be done by a good steady hand, in the following manner: Take a narrow, sharp cutting-hoe 4 inches long, and, walking on one side of the row, take a smart standing cut, leaving one

or more plants at six inches apart. It does not pay for this operator to stop or stoop to reduce what is left to a single plant; that can be done afterwards by girls or boys. There will yet be needed two more hand hoeings at least, but quite differently performed from the first. Take a push (or Dutch hoe) not less than 6 inches wide. Push it, instead of pulling it, along on each side of the row, and at a depth just sufficient to destroy all the weeds. A man doing this can follow the hoe at a slow walking pace and can do three-fourths of an acre in a day, and do it well. The last horse-hoeing may be done when the leaves are a foot long.

Capacity of Apple Barrels.

Mr. Avaril Longley, of Annapolis, in a paper read before the Fruit Growers' Association of Nova Scotia, took exception to the present standard dimensions of the apple barrel as fixed by law, and proceeded:—"The size of our apple barrels is now established by law, although the law is not strictly observed. Through its instrumentality much greater uniformity has, however, been effected as regards the size of the apple barrel now in use. Before the law was passed, the apple barrels made throughout the Province ranged all the way from 1½ to 2½ bushels, or 7½ to 9½ pecks. The dimensions of the barrel as now prescribed by law are as follows: length of stave 29 inches, 19 inches diameter in the bulge, measuring from the inside of the barrel, and 17 inches across the heads of the barrel, estimated to contain 2½ bushels, or 9½ pecks. For several reasons our apple barrel should be made to contain 2½. First, the Canadian and American apple barrels are made the same size as that of the flour barrel, and contain 2½ bushels at least. While our apple barrel is of a smaller size, we suffer both in money and reputation; as in our case there is not only the absence of any reliable standard size to the barrel, but its roughness and generally unsightly appearance are not creditable to us as Fruit Growers and fair dealers. There is also simplicity and convenience in the way of computing quantities with barrels of this size.

Great good would ultimately attend the passage of a law establishing the size of our apple barrels at 2½ bushels, and the attaching of adequate penalties for any and all violations of the law.

As regards the London, Liverpool and Glasgow markets, it is stated that the price obtained for apples is strictly regulated by and is proportioned to the size of the barrel in which they are packed. This is as it should be. Why should the same price be paid for a barrel of apples containing two bushels only, as for one containing two-and-a-half bushels?

Saving Labor in Growing Potatoes.

We have all raised potatoes enough, this year, to make us poor. I experimented some with potatoes, last year and thus, as follows.—I ploughed some in the Fall, and some in the Spring, throwing up ridges, three feet apart, leaving a deep furrow between. This I filled with muck, or manure, or any coarse or half-made manure, as it accumulated in the yards, saving the necessity of hauling it out in the Spring, when the ground is soft and wet.

Before dropping the potatoes, I harrowed down the ridges, dropped in the furrows, and turned back the ridges upon the potatoes, and manure. In about ten days after planting, or before they are sprouted much, harrow down the ridges again, and then they are ready to work with cultivator, and finally with shovel plough. They require no hoeing.

When ready to dig, I hitch a pair of horses on the same plough, with the wags on, and if you will attach a pole instead of the beam, you have about as good a potato-digger as any in use.

As for putting potatoes, of which there has been a great deal to do this Fall, dig a few rows, one side of the field, and plough out eight furrows, as deep as the team can draw the plough, and as long as required for your pit, then hitch on to the scraper, scraping out the furrows to the right and left, wide enough for the pit, leaving a good bank of earth on either side, and when you come to bury the potatoes, they are half covered.

Commence digging on one side of the field, leading towards the pit, and one horse and cart is best, although a waggon will do, if you raise the forward end of the box as high as the stakes will admit, in order to unload easily; keep the team along near where you are digging, to save carrying far; commence filling one end of the pit, and keep on until it is full.

When ready to cover, take the team and plough two or three furrows up as near the pile as convenient, and finish off with shovels. This will save a great amount of labor in covering the pits from a large field of potatoes.—*Cor. Rural Home.*

How to Make Hot-Beds.

A correspondent of the *Cincinnati Times* says upon the subject:—As it will soon be time to make hot-beds for early cabbage and tomatoes, I will give some of my experience in the last ten years. Any one not experienced might think it a very easy thing to make a hot-bed, but he will find after he has been in the business for years, he will sometimes fail. It requires a great deal more care and attention for early beds than for those later in the season. The first thing is to select a warm sheltered spot, on the south side of some building, and it should be protected from the cold west winds.

After leveling the ground, haul your fresh horse manure (there should be considerable straw mixed with it), and put in a pile, off to one side, where you want the bed. In hauling be careful to have it well shaken apart, so there will be no lumps in it. After this has lain from one to three days, according to the state of the manure when hauled and the weather, commence and shake the manure evenly over the place prepared for the bed, till the manure is not less than twenty or twenty-four inches thick. It should extend eighteen inches beyond the frame on every side. Before putting on the frame, take a wide board, and begin on one side and go over the bed, laying the board on and pressing down by walking on it. This will keep the surface level. If the weather is cool, the manure should be covered as quickly as possible with earth. Common garden soil will be the best for the first two or three inches on the manure, as it will hold the water better than soil from the woods, but the top should always be light soil from the woods, and rotten logs. It will not pack or bake after watering. The dirt should not be less than seven or eight inches deep; this will give the plants a good bed to make roots before reaching the manure. As soon as the dirt is on and leveled, put your sash on and cover up tight with boards or straw; then bank up your bed to the top of the frame with manure, and let it remain covered up for thirty-six or forty-eight hours. This will give the bed time to cool off from the first heat, and also any weed seed to germinate that may be in the dirt. Before sowing your seed, rake the bed, and pulverize all the clods; then mark out in rows, north and south, not less than six inches apart; scatter the seed in about five or six to the inch; water and cover up again, and leave till the plants begin to come up, which will be in from two days to a week, owing to the heat of your bed.

I find this will make too long an article, and will give the care of bed and variety in next week's paper.

The Culture of Cucumbers.

The common method among farmers in planting cucumber, melon and squash seeds, is to dig a deep hole, partially fill with barnyard manure, pile the dirt on this, forming a hill four to six inches above the surface and plant on that. All this is misdirected and worse than useless labor. Cucumbers and melons enjoy rich soil, but they do not want the richness buried so deeply in the ground that their roots cannot reach it until after midsummer. They do not do so well on an elevated seedbed as on level ground, and if good drainage were afforded, we should prefer to plant the seeds rather below than above the level of the surrounding surface, that rains might run toward the plant rather than from it. The large amount of heating manure beneath the hill makes the surface dry all the more rapidly, and this is especially true when it is rounded up several inches higher than the adjoining ground. Seeds thus planted may do well very early in the spring, but will wither and dry out by midsummer.

Our own experience has been that manure should be well composted, thoroughly mixed with the soil to the depth of four or five inches and the seed-bed kept as near the level of the ground as possible. For late cucumbers and melons we have often planted without using any manure, relying on application of liquid manure after the plants came up. Solid manure even in contact with the roots cannot help the plant, unless there is water enough to make some parts soluble, and sometimes we shall have two or three weeks in midsummer without any rain. In such cases vines quickly dry up and become an easy prey to insect enemies.

The best way to manure melons or other vines is by manure water, made strong and placed in direct contact with the roots. We have never known it to be strong enough to injure the plants and it always gave a luxuriance of growth that would do any one good to behold. It can be thrown directly over the vines, drenching them and soaking down to the roots; but a much better way is to carefully remove the surface soil from around the roots, pour in the manure water, and after it has soaked in the ground, replace the surface soil which thus acts as a mulch. This plan secures the benefit of hoeing and manuring at the same time. Or, deep holes can be punched into the soil with a hoe handle and manure water turned into these until they are filled. The water and manure will spread in every direction, and the roots will speedily reach their food. This is an excellent plan where unrotted stable manure has been buried under a hill early in the season and is now probably suffering from lack of moisture. The

manure water will set the mass to heating and at the same time furnish sufficient moisture for the roots, causing a most vigorous growth.

In all cases water for plants should be as warm as the air at the time and considerably warmer would be still better. On no account should tender plants be drenched at any time with water howly drawn from deep wells or cold cisterns and springs. If you use such water, let it stand in the sun at least one day to become warm as possible before applying. Many people drench their melon vines with cold water from the well; the ground is packed hard by the water poured on it, the plants are chilled, turn sickly and die, and then the wonder is that they do not do well. Better let your vines go with no watering than give them such treatment as this.—*Rural New Yorker*.

Transplanting Vines.

It will not be too late to transplant vines and trees, says the *Chicago Inter-Ocean*, until the buds have swollen. Every tree and vine should be placed in a rich and mellow soil. Then let the surface of the ground be mulched with coarse manure, straw, sawdust or any other substance that will keep the soil moist, so that new roots can spread easily. When planting trees on grass ground round about the dwelling, the better practice is to put the tree in position, lash it to a stake, spread the roots out on the turf and cover them with rich and mellow earth, after which mulch with stable manure and lay on some stones or pieces of boards and billets of wood to hold the mulch in its place. We have planted a great many trees in this way, and they have never failed to live and gain a permanent foothold the first season. If the ends of the roots have been mutilated, cut off all the bruised portions. If the tops are large and the roots few, remove a large part of the branches and cover the wounds with grafting wax. Evergreens succeed better when planted this month, than if removed earlier. Nursery trees are quite sure to live, provided their roots are never allowed to dry. When practicable, have the trees removed on a lowery or damp day. If they are to go any great distance, the roots should be covered with damp moss as soon as they are lifted. If the roots of any kind of an evergreen once get dry, the future life of the tree is a doubtful case. In setting, give good soil, and if any addition to it be needed, let it be well decomposed leaf mould or muck. Never prune off the lower branches of an evergreen. If the upper ones overhang the lower, shorten them and endeavor to keep the tree well furnished to the base and a perfect pyramid. A few large stones placed over the roots may be employed in lieu of stakes. Give well established evergreens a dressing of rich compost. If the soil is dry and heavy, it will pay to wagon tan bark and sawdust three miles to place around growing trees, as such material will keep the soil moist and mellow.

A Wisconsin Gardener's Compost Heap.

Says J. M. Smith, a market gardener of Green Bay, Wis., to the *Western Farmer*:—

My compost heap has in it about sixty cords of stable manure, and then the refuse of the garden, such as potato tops, beet, carrot, turnip, onion tops, cabbage leaves and stumps, all of the weeds, except such as had seeds in them, (they are all put into a heap by themselves, and will be worked over next season, until we think all the seeds have sprouted before we use it). Of the above-named refuse, there were about fifty two-horse wagon loads. The most of this has been worked over, and some of it two or three times. We have been at it all of the season, as we had leisure with the team, though a part of it was put together late in the fall, after the crops were nearly all gathered, and of course it has not been touched since it was piled together.

Sometimes in the summer and fall it would get to heating. To prevent this, I always build the heap near a supply of water, and when it begins to heat we turn the hose and force pump on it for a while, just long enough to cool it off, and not long enough to let the water drain from it. After the refuse of the garden was worked in (the heap is built in alternate layers of manure and refuse), I went to the owner of a bed of muck that lies not far from the garden, and purchased that, and had fifty loads of it hauled, and covered the whole heap with it.

The result is a very large heap, and if I am not much mistaken, it will next season prove itself to be a very valuable one. I cannot tell precisely how much it has cost in time and money, though it will not exceed \$250.

Now, what is it worth? I am not chemist enough to analyze it, and then figure up and estimate the value of its component parts, but I think I am practical enough to know that it is worth much more than it has cost me. If some of the readers of this should come to me to-day and offer me \$500 in gold for it, I should only laugh at them. I would not take \$1,000 for it, and agree to cultivate next season without that, or something in its place.

Still, I do not rely entirely upon this, valuable as I think it is. I have a large heap of leached ashes, 1,200 to 1,500 bushels of them. Also, a small heap of weeds and refuse that has seeds in it. All of the above manures are used for top dressing after the beds are ploughed. A coat of fresh stable manure will be put on and ploughed in,

Perhaps some of your readers will think this an extravagant and useless expense; but practically the whole thing resolves itself into this one question: will it pay? And, gentlemen, I tell you that it does pay, and pays well.

Understand me; I do not advise any farmer to spend \$300 per acre in cultivating his farm one year, as I have done with my garden the last season. That, in almost every case, would be nonsense or worse, but it is the principle that I am contending for, viz., that as a general thing, where a farmer now spends \$10 per acre in cultivating his farm, he might spend \$20 per acre, and have a much larger net profit than now; in other words, that our farmers might double and in many cases treble the expense of their cultivation, and if it were judiciously done, their net profits would be much more than trebled.

When we have learned that the cultivation of the soil is not only a science, but one of the most intricate of the sciences, if well done, we shall have taken at least one step in advance, and it will be a permanent one.

The Canker Worm.

Farmers will, says a writer to the *Maine Farmer*, upon examining their apple trees, find upon the last year's growth a bunch around the limb, about as large as an acorn, resembling shoe-maker's wax. This bunch upon the inside contains the eggs of the canker worm. As there has been some doubts in the minds of many farmers as to whether this bunch contained the eggs of the canker worm or not, I will state that some four weeks ago, I cut a limb from an apple tree containing one of these bunches and stuck it in a flower pot hanging in the kitchen window, and the plant being watered every day, kept the limb from drying up. Yesterday the plant in the pot was discovered to be literally covered with young canker worms, about an eighth of an inch long. I should judge there were 400. I pinched off the end of one little branch not larger than a cranberry bean, and put it under a magnifying glass and counted 65 canker worms an inch long; just the same worms we fought so hard last season. Now to make an estimate of what is coming next season, I have taken from one young tree not four inches through, twenty of these bunches. Now if they contain 400 each, we have the snug little number of 8,000 canker worms to be hatched next season upon one small tree. Farmers, now is the time to destroy this pest while the trees are bare and free from leaves, by looking over each tree carefully, cutting off every branch, and burning it up.

What Plums to Raise.

EDITOR CANADA FARMER:—Please inform me what variety of plum would be hardy and free from Black-knot, for York county, and oblige,
J. W. H.

If for a garden, Dwarfs or Half Standards are to be preferred. If for the orchard, the Bradshaw (large black imperial) is a large and fine early plum, dark violet red, juicy and good. The Fillemburg, Lombard, Imperial Gage, Pond's Seedling, Washington, Yellow Egg, and Lord Dufferin, are also spoken of in the highest terms by those who have raised them. These trees, especially the Lombard, are vigorous and productive, but of course, in common with all others, not invulnerable to disease or insect attacks. Black-knot can, however, be remedied by cutting it completely out of the tree as soon as noticed, which is best done in June.

HORSE-RADISH CULTURE.—Is the plan of growing this by placing a common round drain-tile with it, and set a couple of inches in the earth, filling the tile with fine earth, and planting a set near the top of the tile and 10 inches above the surface, sufficiently well known? Mr. Bradley, at Preston Hall, says it is an admirable plan; digging for the product is saved, and a fine clean stem is the result.—*English Paper*.

TOMATOES REPELLING APHIDES.—The correspondent of a French journal says that he discovered accidentally that the leaves of the tomato would drive aphides from trees. He had placed some refuse tomato plants in a peach tree badly infested with these insects, and they soon disappeared. He afterwards used an infusion of tomato leaves for the aphides on his house plants, with entire success. The experiment is easily tried.

OUR GRAFTING WAX.—In making a preparation of beeswax, says the *German Town Telegraph*, rosin and tallow, to apply to newly set scions, we have repeatedly given full directions. Ours is to use warm in a liquid state, applied with a small, thin wood paddle, which can be done rapidly and perfectly. We have ourselves, unassisted, set seventy pear grafts in two hours, using the wax as we recommended, in a liquid state, and every one of which grew and became a part of the tree. The proportions we use are four parts of rosin, one part of beeswax and one part of beef or mutton tallow. Melt them together in a skillet (which is the best) or a tin cup, and melt well. It should remain in the vessel and be used as needed. Twenty or thirty scions can be waxed with one heating up. When much grafting is to be done, a little fire for heating the wax should be made on the spot, between two bricks or stones.

Live Stock.

A Perfect Sheep.

Mr. W. L. Archer, of Pennsylvania, who is accounted an excellent judge, recently described a perfect sheep as follows to the Washington County Agricultural Society.

1st. Of the form—first, the countenance should indicate docility; the eye of gentle and quiet-like expression; the form of the head broad or wide between the ears, and also between the eyes; the bridge of the nose broad, and wide; the nostrils, with thick lips, the ears large, thick and mellow; the measure should be short from the eye to the muzzle; the neck should be short and thick, carrying the thickness well up to the head—the top of the neck full and rising from the withers to the crown of the head; the withers and back should be in line; the rump or tail drooping but little from the line of the back; the brisket projecting well, heavy and broad enough to spread the shoulders sufficient to admit a large hand between them; the ribs should be full rounded; barrel shaped chest; lungs short and broad; the hams muscular and heavy; well joined behind and full from the tail down to a line of the belly and brisket; legs should be short, with heavy bone, which will be an index to the bone of the whole animal; the hind legs should present a perpendicular line from the root of the tail to the fetlock; the foot neat and square under the sheep, and free from trumpet-hoof form.

2nd. Rams when full grown should weigh from 125 to 180 pounds in full fleece. The ewes, when fatted, should average, without wool, 100 pounds.

3rd. Covering.—It is desirable to have a staple three inches long and of uniform length, including the belly, and of sufficient density to form a smooth, even surface, also to prevent the fleeces from parting on the back.

The Committee in announcing this report issue a congratulatory cackle, avowing that the above description is the most wonderful scale of points ever promulgated. To

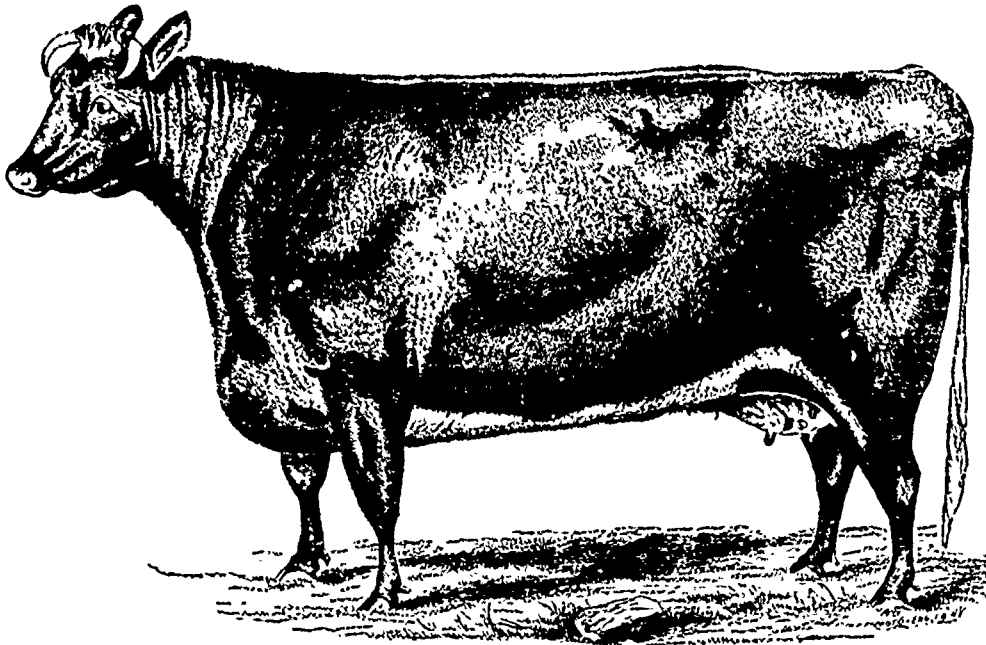
our view scales of points are usually fanciful and of doubtful utility—an attempt to make an exact science of what lies the closest analysis. Fixing the relative value of points is an absurdity. Exceptional excellence in one important point may give the highest value, almost irrespective of minor defects, as men with a decided genius for anything are not judged according to their less exceptional talents. It counts nothing against Dexter, the great trotter, that he has white feet, though thousands of humbler horses are less saleable for this blemish.

In this description of a good sheep, covering is vaunted third in order of importance and character, and texture of wool is made entirely subordinate. For the great majority of sheep the wool is the supremely important point, and their value to the breeder depends almost entirely on its texture, weight and general character. In plain truth, Mr. ARCHER has given a good description of an excellent sheep for some purposes, and for this he deserves credit. To make anything more of this scale of points as a universal standard of value, is only to expose him to undeserved criticism on account of unwise laudations of indiscreet friends.

Lambs for the U. S. Markets.

EDITOR CANADA FARMER.—It is a well known fact that the main market for the surplus lambs that are raised in Canada, is found in the United States; and the question

arises, which of the different breeds of sheep, that we have in Canada, is best adapted to supply the wants of that market? For my part I have no hesitation in answering that the Leicester comes nearest to perfection in this respect, fulfilling all the requirements that are necessary in a lamb, to supply their wants. The lambs of that breed are noted for their early maturity, that is, their aptitude to lay on fat at any age, and this is a point not only of the greatest importance, but of absolute necessity when we take into consideration the competition they have to withstand in large markets, such as those of Buffalo, Albany, and New York. They are also of good weight; many of them weigh, in the months of October and November, from 100 to 120 pounds live weight, if they have had any thing like a fair pasturage during the fall months. And there is still another point in which they are very valuable, that is, that they supply a fine quality of wool for combing purposes. The wool is of good length, uniform texture, and has a fine, silky lustre—qualities which are much sought after by the manufacturers of goods made from the fabric, and, as the most of this class of wool has to be imported into the United States, it is of great importance that Canadian breeders should not only encourage and foster the raising of the Leicester, but also keep the breed up to the high standard it has already attained in the country,



Mimulus.

that it may soon compare favorably with those of Great Britain, which is its birthplace, and where it has been held in the highest repute since the days of Bakewell, who first established the breed as a distinct one about the middle of the last century.

A CANADIAN.

N. Dumfries, Ont.

Short-horn Cow, Mimulus.

The cut on this page represents the Short-horn cow "Mimulus," belonging to Mr. J. Dryden, of Brooklin, Ont. She was calved Jan 30th, 1868; got by Champion of England (17526), dam Mistletoe, by Lord Raglan (13244); g. d. Maidstone, by Matadore (11800); g. g. d. Fantassie, by Inkhorn (6091); g. g. g. d., bred by Mr. Renne, of Phantassie, one of the first breeders of his day, but a man who through prejudice or some other cause, would never register his cattle. "Mimulus" received first prizes in 1869 and 1870 at the Royal Northern Exhibition; also in 1874 at the South Ontario Agricultural Society's Show, competing on that occasion with five imported cows. She is from the famous herd of Mr. Cruickshank, Scotland.

A CALIFORNIA MAN recently lost 100 head of sheep in one night from the flock being turned into a wheat field where they ate so much grain that, by its swelling, their stomachs were ruptured.

Water for Stock in Winter.

We question if there is anything more neglected than the adequate watering of stock in winter. Where wells or cisterns are quite handy, but where the water has to be supplied by means of pumps and pails, how often is the work hurried through carelessly before the animals are nearly satisfied? And how much worse is the case, when the nearest stream is half a mile or a mile away from the farm buildings, and the stock has to be driven to it in a drove once or twice a day? They may not all be thirsty at the time of watering, and of course in such case they will not all drink. Are they therefore to be punished by a ten hours' deprivation till next watering time? The necessity for an ample supply of water is even more apparent in winter than in summer, for the food is mostly dry fodder during the cold weather. A writer to the New York Sun treats this question pertinently when he says drinking places should be made easily accessible, so that the animals should not be obliged to wade through mud and ice in order to reach them, thereby getting their feet and legs wet and covered with filth to be carried back into the yards or stables. Animals will frequently suffer thirst rather than wade through a mud hole to get water. Then again, the water should be pure and sweet,

or it will be rejected until the animal is forced by thirst to drink it. Cows, in particular, sometimes have strange fancies in regard to water, often preferring that from a stagnant pool to the pure and sweetest spring. But as a rule water from a well, spring, or cistern is better for stock in winter than from an open pond or running stream which is frozen over during frosty weather. The water in the latter is usually too cold either to suit their taste or to be healthful. No rule can be laid down to meet the circumstances in regard to the amount to be given or the number of times animals should be watered per day or week in winter, but we can safely say that each animal will, if permitted, solve this question for itself.

In regard to watering he sees a celebrated author sums up the question in the following words: "It rests only to say, that water, although

it should never be given to a horse in large quantities shortly before being put to work; or at all on his coming off work, while hot; still less while jaded or exhausted—should ordinarily be furnished him often and in abundance. Not so much in large draughts at a time, which improperly distends the stomach, as in small quantities, at frequently recurring intervals." If a farmer depends upon hired labor to care for his stock, he must be ever on the alert to prevent neglect, unless the laborers are of a more faithful kind than is usually obtained in this country.

The horses may have been hard at work during the day, and when brought in at night they would be hastily unharnessed, and left with snow and mud hanging to their legs and feet; no blankets being put on in the coldest weather, although the stables were little better than open sheds. To complete the neglect, hay would be tossed into the rack, and oats into the trough before them, and then the farmer goes to the house and forgets that the horses have had no water since morning. Perhaps this latter requisite to health and comfort is offered before the animal is half through with his meal, and if he refuses to drink under such circumstances, it is taken as a proof that he is not thirsty; hence no more is offered him until the next day. Now, this haste in the care of animals is the cause of many diseases, as well as general unhealthiness, shown in a staring coat, loss of spirits and health. An animal may be given plenty of good and rich food, and still remain poor: all the result of bad management in other matters which are quite as important.

The Proper Quantity of Salt for Stock.

The necessity for a regular and adequate supply of salt to stock will not be disputed. Farmers all know it, admit it, and carry out the principle practically by applying it, but how? Usually, by one or other of two methods. The first and most common is to throw down a small quantity on the ground, or in the trough, before the animal, once or twice a week, or rather, whenever they happen to think of it. The other is to keep a boulder of rock-salt standing in some convenient place, where the cattle may lick it as often, and as long as they please. Now a moment's consideration ought to show that both these plans are wrong. Indeed the only plea that can be offered on their behalf is that salt administered by either method is better than no salt at all, and it is a doubtful one. Whatever is worth doing is worth doing properly, even to the salting of cattle. By the first method, the animal system cannot be adequately nourished, because the supply is neither regular, nor uniform in quantity. It may, moreover, be too small, in which case no appreciable effects will follow; or, it may be too large, and cause positive injury. The second plan, which permits an indiscriminate licking at all hours, requires no comment. Surely few require to be informed at this time of day of the irritating, inflammatory, and generally disorganizing effects of a too liberal supply of salt taken into the stomach. The great point to be aimed at then, is a happy medium between these extremes, together with uniformity and regularity in the supply, if we would have the condiment serve its most beneficial purpose, viz., that of aiding the stomach and intestines. In the course of an elaborate article on this subject, the *New York Times* gives some interesting facts and experiments which we subjoin. It says:—To determine the quantity needed for the different domestic animals, numerous careful experiments have been made. Recognizing the importance of the subject, the French Government, not many years ago, commissioned a number of practical and scientific persons to investigate and report upon it. In their report the following scale was fixed upon as the minimum daily allowances for the different amounts in ordinary condition, viz:

| | Ounces. |
|--|---------|
| For working ox or milch cow | 2 |
| For fattening stall-fed oxen | 2½ to 4 |
| For fattening pigs | 1 to 2 |
| For store sheep (double for fat sheep) | ½ to 1 |
| For horses and mules | 1 |

A German dairyman found after many trials, that with two ounces of salt daily his cows gave the most milk. The careful chemist and farmer, Boussingault, once fed six sters for thirteen months in two lots, giving the same kind of fodder and water to each, but giving one lot one ounce and an eighth daily, and to the other none. A remarkable difference was at once manifest. The first lot were all sleek, smooth-coated, and in perfect condition; the other became rough, mangy, and ill-conditioned, and each weighed at the end of the test 140 pounds less than those that had been supplied with salt. Many other similar results might be cited, but these are sufficient to induce those who still doubt the value of salt for all kinds of farm stock to test the matter for themselves.

Not only is salt an agreeable and needful article of food, but it is in some diseases almost a specific remedy. For those parasitic diseases, to which sheep are very subject, such as the liver rot, (flukes in the liver,) vermiform bronchitis, (worms in the bronchial tubes,) and worms in the stomach and intestines, salt is an unfailing remedy, as well as an effectual preventive. The irritating worms which sometimes infest the rectum of the horse are removed at once by an injection of a solution of one ounce in a quart of water. But it is as a constant addition to the food that it is most useful as a preservative of the health of our domestic animals.

Breeds of Pigs.

This question is at present receiving a considerable degree of attention, and various are the theories advanced as to the breeds more specially adapted to various climates, the largest bodied, the most easily fattened, &c. On the general question, some men of undoubted experience take pretty strong grounds, asserting that, no matter how pure or how high the breeding, unless ample food of the best quality is regularly supplied, the breed will degenerate. Nay more, that finely-bred animals are much more amenable to deterioration through ill-usage than others, whose ancestors have been subjected to such treatment for generations before. Speaking of the various breeds which are most popular, Mr. D. E. Evans, of New York, writes as follows to the *Home Journal*:

The Berkshire of the present day is the result of very many years' careful breeding and good feeding, and is deservedly popular in nearly all sections of the country, the West seeming to lead with Berkshires and their crosses. In color they are black, with the end of their

tail, all four of the feet, the nose and occasionally on the shoulder, white. The white on the shoulder should not be there, to suit the full taste of a fancier, though a small white spot is admissible. More white than that just enumerated does not argue impurity, though it is not desirable, as it prevents uniformity. They are easily kept, fatten at almost any age, and with ordinary good care, produce a greater proportion of lean to the amount of fat than any other breed.

The Chester White, in its purity (there are many specimens of white pigs sent out as Chester Whites which are a disgrace to the name), is a very desirable breed where large pork is desired, and where the color—white—is desired in preference to the black breeds. They mature at from twelve to eighteen months, and produce heavy, good pork and quantities of fine lard. They have heavy hams and shoulders, broad and deep bodies and pendant ears, with a broad, rather short nose.

The Essex is an entirely black breed, and is, by many, considered to be a very desirable one, as they attain their growth early, are highly refined, and are good to select boars from to cross with coarser breeds. There are other breeds, however, which suit me better.

The small English Yorkshire, or the medium English Yorkshire, the latter having been formed by crossing, or rather, breeding the large and small breed of Yorkshires together, possess merits which are not possessed by any other breed, to my knowledge, if a high system of feeding and care be pursued. Under the best care, feed and management, they have produced better results than any I have ever bred. If you do not want a pig which requires that, do not buy the Yorkshire, but if you do—and all farmers who are real farmers know that high breeding is the only kind of feeding that pays—by all means try the Yorkshire.

This breed produces a greater proportion of fat to the amount of lean than any other breed known, I think, which is a desirable feature with many, especially where lard is desired.

The best specimens have a thin coat of fine, soft, white hair, and have a skin of a pinkish hue, which makes them easily recognized from other breeds. They have very heavy hams, are short, deep and broad, and at certain ages their usually very short noses take an upward turn, the nose becoming heavily *dished*, in some specimens, so as to prevent them from rooting.

Cow Stables and Bedding.

It is a matter of notoriety that a great many farmers do not treat their cows fairly in the matter of stabling and bedding. If they feed them well and water them, or see that they are watered pretty regularly, they seem to think that they have done all for them that can in conscience be demanded, and incessant is the grumbling, should the returns not meet their expectations. When such men learn that comfort and cleanliness are just as essential to beast as to man, in order to the proper discharge of their functions, they will have taken quite a step in advance; and when this knowledge shall have been put into practice, they cannot fail to be satisfied with the beneficial results that will follow, both in increased returns and in the condition of the animals themselves.

Sometimes the excuse is offered, especially in backward and poor seasons, that straw is too scarce to be wasted in the bedding of cattle. Well, is there no substitute—shavings, sawdust, anything rather than the bare, wet boards. And then how is the stall floor constituted? Is it level with the general flooring around it? If so, the constant weight upon it must in turn cause it to sag more or less, thus making it a repository for the retention of water, in which the animal must lie, to her direct injury, unless indeed the evil be averted by the use of a double quantity of bedding. The *New England Farmer* gives an interesting account of the plan followed by a dairyman in that portion of the States, who uses forest leaves largely for bedding purposes. Speaking of his stall, he says:—

The cows stand upon a platform nearly a foot high and having a slight inclination to the rear. The length is regulated according to the size of the animals, by spiking on plank at the end, for those of unusual length. At the edge on top of the floor is nailed a narrow strip of 1½ inch plank running the whole length of the stable, chamfered on the inner edge where it touches the animal when lying down. On the platform is spread daily a bedding of forest tree leaves, which are prevented from being wasted by this guard at the rear of the platform. The leaves keep the animals clean, and when they become saturated and partially decayed, they are worked back into the trench and go down the scuttle with the manure. It would seem at first thought that this edging plank would retain the voidings of the animals, but as the platform is short, nearly all the manure and urine is discharged into the trench below, while the strip of plank prevents the cows from slipping back uncomfortably while lying down, as is often the case where no such arrangement is secured. The leaves are gathered on the place, many of them being col-

lected under the shade and ornamental trees which abound here in the vicinity of the buildings, but more are collected in the woods on the back portions of the farm. Mr. Hadwen's method of collecting and storing leaves seemed to us to be the most practical of any way we ever heard of. Every one who has ever tried it knows that a large wagon-full of leave, if packed solid would go into a pretty small hole, and that their bulk and the difficulty of getting a load of them into a wagon, makes leaf-gathering seem a good deal more like boys' work than like men's, but we found a plan here by which the collection and use of forest leaves may be made a profitable business for a few days upon every farm where leaves abound.

Instead of raking them together and pitching them on carts, to be again pitched over and stowed away in some large room in the barn, from which they would require a third handling before being used, they are immediately put into old flour barrels as fast as gathered, pressed in by treading with the feet as solid as possible, and after filling a wagon-load of them they are carried to the barn and piled up outside, where they remain perfectly secure till wanted for use in the stables.

Care of Sows When Littering.

An Ohio farmer who has been a hog breeder for the past twenty years, writes to the *National Live Stock Journal* his views on the above subject. He says:—Two or three days before the time they are to pig, I put them each in a separate pen, constructed as follows: I build low sheds on the south side of a board fence, with the front to the south, say from six to eight feet in width by eight feet in depth; to the front of each is extended an open pen, about eight or twelve feet, to allow them to have access to the sun and air. In each pen I place a little dry fine straw, or, still better, the straw run through the cutting box—not much straw is required, as they are apt to overlay the pigs if they have too deep a nest. Care must be taken to keep the bedding clean and dry, but always on the ground. A little ditch dug around the pens will keep the water from running into the sheds. While the pigs are very young, the sow should be fed light, with but little grain, mostly a little thin slop, increasing the feed gradually till the pigs are able to eat some, then they can be fed quite strong of corn soaked in cold water from twenty-four to forty-eight hours. The sow and pigs should be kept in this pen till the pigs are old enough to know their dam, when they may be turned into a grassy lot together. At the same time, you should have a pen high enough from the ground to allow the pigs to pass under and exclude the sows. In these pens should be placed troughs long enough to give each pig plenty of room. In these troughs the soaked corn should be fed to the pigs, and the sows may have hard corn. I generally let my pigs run with the sow until I see some sign of the sow weaning them, when I turn her away on clover, to run without any additional feed until green corn comes. Having followed the above plan for over twenty five years, I seldom have much trouble in rearing pigs.

Foul Feeding of Pigs.

If one thing needs reforming more than another, it is the manner of raising and feeding swine. From the day they are large enough to eat they are offered all manner of refuse about the place, such as rank weeds, filthy slops, spoiled vegetables and meats, dead fowls, &c. They are allowed to rummage the dung-yard and glean the refuse of food in the feces of cattle and horses, on the ground of economy. But we imagine that the quantity of food saved in this way is very insignificant—not to exceed the value of a bushel of shelled corn a year among the whole stock on an ordinary-sized farm. The objections to the practice of keeping swine in this way are so serious, however, that the reasons in favour of it have no force at all. The origin of trichinosis in swine may be always traced to the consumption of vile stuffs in their food, or being housed and yarded amid filth and foul air. Every few months the press announces a case of trichinosis in an individual or a whole family, with all the horrible details and sufferings which attend the parasitic attack. Only lately somenew cases were reported here in the West which are alarming. We are quite sure that every farmer, and every one who feeds and fattens a pig, will only need to have their attention called to so important and serious a matter to secure a complete reform in the practice of feeding an animal which will take whatever is offered to it, and will live in the most filthy holes and yards. Interest, as dear as health and life require a thorough reform in keeping and feeding swine. Let their food be as pure as that which other animals consume; let them be kept in clean quarters, and have pure air; let diseased or unthrifty animals be separated from those in health; and we may have no fears of trichinosis among either swine or human beings.—*Eng. Live Stock Journal*.

Buying Stock.

One of the first things which the young farmer has to consider in stock on his farm, is the proportion between his stock and the quantity of food that will be necessary to support them. It will be essential for him, of course, to decide whether he will direct his attention to breeding cattle, to dairy stock, or store animals. Should his decision be to rear stock for the market (and that will be easily determined by the character of the soil he holds, and his proximity to a good market), he will require to know how much stock his land will carry, because, should he overstock his farm, he will be compelled to dispose of his cattle before they are fit for the butcher, and have to face, consequently, certain pecuniary loss. On the other hand, should he fail to make his calculations with necessary exactness, and stock his farm with an inadequate number of cattle, he will incur a diminution of profit. Sir John Sinclair says, of buying cattle, "When the hide or skin feels soft and silky, it strongly indicates a tendency in the animal to take on meat; and it is evident that a fine and soft skin must be more elastic, and more easily stretched out to receive any extraordinary quantity of flesh, than a thick or tough one. At the same time thick hides are of great importance in various manufactures. Indeed, they are necessary in cold countries, where cattle are much exposed to the inclemency of the seasons; and in the best breeds of Highland cattle, the skin is thick in proportion to their size, without being so tough as to be prejudicial to their capacity for fattening." Mr. Bakewell, who did so much to improve the breed of Leicesters, invariably attended to the following points when purchasing stock:—Beauty of form, or a pleasing proportion between the various parts of the animal; utility of form, or a disposition to accumulate flesh and fat on the best and most useful parts; a fine quality of flesh; and a propensity to fatten at an early age, and in a short space of time. Youatt assures us that he paid much attention to what is generally termed *kundness* of the skin, or a mellowness and softness, and yet firmness, equally distant from the hard, dry, indurated peculiar to some cattle, and the loose and flabby feeling of others. It may be added that it is estimated that the best grazing-land in Lincolnshire will, under favorable circumstances, support one ox and a sheep per acre throughout the summer, and that the former will gain 20 stones, or 280 lbs., and the latter 10 lbs., a quarter, or 20 lbs. We may add that if the autumn should be well advanced before the stock be purchased, it will be necessary to study the health of the animals. If they appear jaundiced and foot-sore, they should be avoided, because, although the disease may not be exactly present, they have evidently undergone a good deal of fatigue and exposure, both predisposing influences to pleuro-pneumonia and foot-and-mouth. If the stock are intended for fattening, choose those which are rather above the medium in quality, and therefore somewhat higher in price. Those who give a preference to either extreme are seldom well paid. If extremes are partly to guide choice, the best quality and consequently the highest priced will generally leave the largest return for the food consumed, providing that strict attention is bestowed on their comfort, both as to housing and food. As regards sheep, it should be borne in mind that the highest-bred animals, whether pure or crosses, are likeliest to give a good return for their keep.—*Eng. Live Stock Journal.*

Selecting Horses by Their Colour.

In the case of horses, there is no doubt that fashion with regard to colour has been greatly influenced by the special qualities usually found in combination with special tints or shades; though it by no means follows that a colt unerringly exhibits the same coloured hue as its immediate parents. A writer at the close of the last century stated very broadly that not only among the Turkish horses were many of pure white colour, but that in Persia there were studs of them, several thousands in number; while it is a well-known fact that until after the death of Prince Albert, the Queen's state carriage was drawn by eight cream-coloured horses, of whom a succession is still kept up at Hampton Court. Strange to say, however, while the cream-coloured horse is noted for powers of endurance, the grey is held to be deficient therein, and while black horses are rarely first rate in point of speed, the browns, the chestnuts, and the bays the last more especially are noted for their turf victories at Epsom and Doncaster.

An author of good credit, treating of the mixture of breeds in cattle, and especially in horses, advises, with a good deal of reason, to take care of the good qualities of the horse and of the mare. He says, that an ill bred horse may beget a colt that may have a fair colour and shape, appearing beautiful, he may be also strong and vigorous, but of a vicious disposition, which may render him incapable of ever being brought to rule, without half destroying him. As to the choice of a stallion, a person of great skill says, that the dapple-bay, the white-bay, and the dapple-

grey are to be preferred; but do not allow of a horse of a pure black, provided he has a white star, and a white foot; but in the judgment of others he should be all of one colour. We find, in many cases, that horses of a bright bay colour, with a black mane and tail, are good as well as beautiful, and these have commonly the tips of their ears and the extreme parts of their legs black; it is also common for a dapple-grey to have a white mane and tail, with the former mentioned extremities white, such as the tips of the ears and the extreme parts of the legs; but for other coloured horses, except the dun, we seldom find their manes and tails of a colour different from that of the body; but in a dun horse, the long hair in the mane and tail is commonly black, and for the most part there is a black lift down the back, which is not a little remarkable, as it is not observed in any other creature except the ass or mule, that I know of.

In a horse, indeed, it is only a plain straight life, but in the ass there is also a cross stroke of black over the shoulders, so that if the skin were to be opened and spread, the black would exactly represent the figure of the cross, as it is represented in painting or carving for a crucifix. Some pretend to tell us, as to the cross upon an ass's skin, that asses were not thus marked before the Christian era, and that none are now without the sign; but upon what good authority they assert this, I know not. Some are of opinion that the black lift down the back is a token of strength, because the ass that is marked with it is accounted the strongest creature in the world among animals, according to the size. And for this reason asses are used for carrying heavy, and drawing heavy loads. If this lift then be a mark of strength in an ass, we may well suppose it is not less so in a horse, and likewise we may judge it is also a sign of strength in the mule, and is produced by couplings between the horse and the ass: we may well suppose that this lift, generally speaking, comes from the ass.—*Cor. English Farmer.*

Farcy Cattle.

Short-horn sales are becoming almost as 'sensational' as those of thoroughbred yearlings were a short time since, and it is no uncommon thing for an animal of the Kites or Booth blood, each of which strains has its respective admirers and even champions, to be sold for a price equal to that which a Derby winner would have realized a few years ago. These pedigrees refer only to the sales of 'pedigree Short-horns'—that is to say, of animals inscribed in the herd-book, which is for cattle what the stud-book is for the turf; and from them we learn that while 65 sales held in Great Britain yielded a total of £228,088. 16s. 6d. the 57 sales in America amounted to £204,750. 6s. 10d. Each of the American sales amounted, upon an average to £3593, as against £3069 for each of the English sales; but the advantage does not in reality remain with American breeders, for though 8 fewer sales were held there, the number of animals disposed of was within 10 of those sold at home. The 2389 Short-horns sold in America averaged £79 each, and the 2339 sold in Great Britain £87 each. The largest total realized at any one sale was £42,919 16s., for which 51 animals belonging to the late Torr, a Lincolnshire farmer, were disposed of in September. The highest price given at this sale was 2160 guineas, and the average of the whole lot was £510. Still more remarkable was a sale held in Scotland a week previously, when 39 animals, the property of Lord Panmure, fetched £26,223 10s. This gave an average of £672 8s. for each animal, one of which went for 4500 guineas. At a third sale 31 animals fetched more than £10,000, and there were several others at which the total was over £7,000, and the average over £200. The most successful sale held in America was that at which 82 Short-horns fetched £18,531 17s. 5d., with an average of £402 19s. 9d., for the whole number, one of them reaching £3225. At two other sales in America, totals of rather more than £10,000 were obtained for 35 and for 33 lots, the average in both cases being slightly over and under £300. These figures may be left to speak for themselves; but it is impossible to avoid the suspicion that purchasers will not, in the long run, get the best of the bargains. *Agricultural Gazette.*

Shoeing Horses.

An English jockey of experience, writing upon this subject to the *Live Stock Journal*, deprecates vehemently the practice of paring and burning followed by blacksmiths in fitting the shoe to the horse's foot. He says.—Most of the horse-shoers of the country prepare the foot, fit a shoe, and secure it to the hoof in the same manner that a wood butcher fits a shoe to an old wood or ox sled. The mechanism of a horse's hoof is one of the most wonderful and ingenious structures that can be found in all the works of the Creator. Beneath and in the rear of every foot there is a frog, which is a tough and elastic pad for preventing injury to the animal whenever he plants his foot on any hard substance. Large rolls or cylinders of india rubber are placed beneath railroad cars to prevent any injury to any part of the car or to the cargo with which it is loaded. The frog beneath the foot of a horse is designed to subserve a similar purpose. But the manner

in which most horses are shod, lifts them up, as it were, on short stilts so that the frog cannot perform its appropriate functions. If we look carefully at the young horse when he is trotting or running, it will be perceived that every foot is brought down to the ground in a manner that the frog receives the powerful blow. By this means all injury to the animal is avoided. Science teaches us to permit the frog to develop and expand downwards. But most blacksmiths seem to think that the all-wise Creator made a mistake when he formed the hoofs of horses. Hence they fall at the frog, with red-hot burning-irons, and with edge tools, and with any other appliance that will enable them to remove this extraneous excrescence. Illustrous names! Why not shave all the rough, callous, adipose tissue beneath their own heels, and allow the bones to rest on a plate of iron inside of their own boots and shoes.

Fat Sheep for Heavy Fleeces.

A writer in the *Country Gentleman* says:—"There is much said about ewes being too fat to breed well. In my experience of twenty years I have never seen anything that led me to think so, providing the flesh was put on with good pasture during the summer, and a few roots with good hay in the winter. The fatter sheep become under such circumstances, the more valuable I consider them. There is no time in the year when it pays better to feed a small allowance of grain daily than in the fall after the feed gets frozen, and it is not necessary to bring the flock to the barn.

"It is an old saying that 'sheep well-Novembered are half wintered.' Keep the ewes fat, and the lambs will be fat and the fleeces heavy. I do not say that it is better to have the lambs come early or late, but I do say that it is better to have them fat; but whether early or late, they are saleable. All ewes that with good care will not raise a lamb and shear four lbs. of washed wool, should be sold. I have some in my flock that will shear nine lbs. and raise a pair of twins, and it costs no more to keep one than a sheep that shears but three pounds. I think that no one will hear the man who keeps his flock in this way, complaining because his sheep are all 'run out,' and do not pay him, and the like.

"Ticks must be kept out of the flock; they are the worst enemies of the sheep. If they are not killed they will destroy the sheep. For killing them I have tried nothing better than tobacco juice."

Overfeeding Stock.

It has been averred by some that breeding, or feeding cattle is a kind of necessary evil, involving loss; but we cannot help thinking that the experience of such, if truly reported, arose from overlooking the fact that enough, in the way of feeding, is better than a feast. There is no doubt considerable loss sustained sometimes through well-meant but short-sighted overkindness. Too much food is placed at one time before animals, with a view apparently to let them pick the choice morsels, the rest going to waste; and still another result of overfeeding is a clogging of the alimentary organs and general derangement of the intestines. At a late meeting of the Gloucestershire (Eng.) Farmers' club, Mr. H. Cox of Minchinhampton narrated some of his own experiences on this subject, from which we make an extract. He said:—"Several years ago I had eight large oxen tied up to fatten, under the care of an old man who boasted of having been head bailiff more years than I had been born. I put out for those animals about once a fortnight what I considered a liberal allowance to last that time—4 lb. cake and 2 lb. meal each per day; sweets and hay without limit. The cake and meal were always out before the time was more than half expired, but the cattle would not fatten, and as often as I complained he retorted that they would fatten fast enough if I did not keep the key of the granary; that the hay was not good enough, and that he never could get fattening hay off those hills, and that the sweets ought to be washed. It was no use to reason with him; so, without telling him my object, I got the four smallest out of my herd of yearlings; those were allowed to run on a very poor bank, with a small sled to run back to, and I gave strict orders that they should have nothing but the cleanings of the mangers of the fattening beasts, and that the roots and tops from the sweets should be taken out on the grass banks for them to pick over. In a few weeks the yearlings began to get very fresh, and I had to complain that they were getting too fat, as they were intended to turn out on the common. The old man declared with an oath that I was always grumbling, do what he would, and that the yearlings had never had an ounce of anything more than I had ordered. Those beasts actually got fat much faster than the more pampered ones, and were sold to the butcher at about two years old at more than eight score per quarter, and were fed with what the others would have trampled under their feet. If, after those beasts had got this good condition, I had carried out my first intention and turned them into poor keep, that condition would have been wasted and the food lost, yet how many beasts do lose their condition twice or sometimes thrice during their first three years?"

The Dairy.

Milking Properties of Ayrshires, Short-horns, and Jerseys.

The Ayrshire breed of cattle owes its celebrity to the wealth of its udder; and the profusion of lacteal secretion of the Ayrshire cow causes her to be regarded more than other members of the bovine race as prominently the dairyman's friend. Mr. Gilbert Murray, indeed, has stated that "there is no breed of cattle in these islands that will produce an equal quantity of milk, butter, and cheese from a given quantity of food, with the pure-bred Ayrshire;" but Stephens in his "Book of the Farm," truly observes that "dairy men in towns prefer Short horns, having an eye to profit, they being steadier milkers and better feeders." Both statements may be verified, and admit of reconciliation. Short-horn cows are larger than Ayrshires, and consume much more food. Many of them are grand milkers, which are usually not the best bred, but the old sort, which have not had their udders improved away, to make them better feeders. There was a time, it must be recollected, when the Short-horn was more of a dairy animal than a grazer, and whenever cultivated as such, no breed has hitherto surpassed it in the large quantities of milk yielded. There have been records, even in modern times, of Short-horn cows giving, in the height of the season, from seven to nine, and even ten gallons of milk per-day. We may seek in vain for such results to be surpassed, or even equalled, and it is because they are capable, when well fed, of producing such immense quantities of milk that London dairies are so generally stocked with Short-horns, the owners of which do not regard the enormous bulk of food they consume, so that they continue to fill cans with the commodity, from the sale of which they get their living. But if the assertions of Mr. Gilbert Murray be regarded attentively, it will be seen that he does not pit Ayrshires against all others, only in connection with the food question.

Bell says that Mr. Bates related many incidents he had known of Short-horn cows being large milkers; one of which was, that a cow owned by Mr. C. Colling, in the early part of his career, gave 26½ quarts at a meal. Mr. Bates knew another in the habit of giving 19½ quarts twice a day, which latter was by Masterman's bull, and owned by Mr. Alexander Hall. The cow was the ancestress of R. Colling's Princess tribe, and C. Colling's bull Poljamba. Mr. Wastel had also a cow called Barforth, that yielded 18 quarts of milk each meal, and made 16 lbs. of butter per week, of 2½ ozs. to the lb. Mr. Bates never had a cow of his own that gave more than 14 quarts to a meal, the quantity attended by his first Duchess. Each quart of her milk produced 1½ ozs. of butter, and her weekly yield of the latter was 14 lbs.

The following is also given by Bell as being stated by Mr. Bates: "I also know that Mr. R. Colling's Bright Eyes, dam of Marske bull, gave 15 quarts of milk each time of milking. The late Mr. Hustler, of Aeland, who had Daisy Cow by Favourite, own sister to the Daisy bull I used, matched her as giving more milk when on 'fog' in the autumn, against his tenant's cow. On the milk being measured, the latter gave 15½ quarts, and the Daisy cow 16 quarts. Matchem cow, the dam of the Oxford premium cow never gave less than 12 quarts per meal when on grass after calving."

As to the quantity of milk Ayrshire cows will give when in full profit, Alton in his survey of the country, states that some cows have been known to yield as much as 5 or 6 gallons per day; and that although such realizations may be rare, many when in their best plight and well fed will yield 4 gallons per day for three months, and during the season produce something like a total of from 500 to 900 gallons per cow. Alton was, however, accused by the Ayrshire dairy farmers of underrating the yield of the best cows, and he admitted subsequently that satisfactory proofs had been afforded by Ayrshire milkers producing from 6 to 7 gallons per day as a regular supply for several weeks in succession. At a milking competition held at Ayr, in April, 1861, the greatest yield at a single milking was rather over three gallons, which produced at the rate of 15 lbs. of butter per week. But it is as a cheese producer far more than for her yield of butter that the Ayrshire cow is renowned. It is well known that there is no sort equal to the Guernsey for yielding a large proportion of cream to milk, but the Ayrshire affords a large quantity of the latter of fair average quality, and is thus pre-eminently well fitted for general dairy purposes, when her entire produce requires to be utilised either for the manufacture of all best cheese or butter, and skim-milk, or household cheese.

Ayrshires and Jerseys may be compared better, because nearer in size than the former and Short-horns, in consequence of which it is to be presumed the consumption of food would not be very dissimilar. Jersey cows stand in high reputation as large milkers, and there are certain published statements which tend to show that some of them, at least, approach very close in their abundance of lacteal supply to the quantities mentioned by Alton as having been afforded by famous Ayrshires. In the catalogue of Mr. Walter Gilbey's herd, issued on the occasion of its disposal about thirteen months since, at least half-a-dozen cows are mentioned as having yielded forty-eight pints of milk per day when in full profit, and two were stated as producers of fifty and fifty-one pints per day respectively. A herd of Jerseys would, no doubt, consume less food than a herd of Ayrshires, and probably, in certain situations and circumstances, might possibly prove equally, if not more, remunerative than Ayrshires in either milk, butter, or cheese.

This only shows that comparisons are odious. Taking the kingdom generally, probably Mr. Gilbert Murray's dictum may be established, because Ayrshire cows being of a nice medium size and very hardy, would be suitable for the dairies of the largest number of districts, and make better returns than either the larger Short-horns—who are only adapted for milkers either on first-class pastures or in connection with the high-feeding system of towns—or the little Jerseys so fawn-like and beautiful in a park, but not practically of so much value as the Ayrshire on farms generally. It should be borne in mind that Jerseys stand quite as far below Ayrshires as feeders and beef-makers as the latter do to the Short-horns, which, after all, is an element in the matter, as all dairy-farmers like to keep animals they can make something of when they get dry and barren.—*Cor. Eng. Live Stock Journal.*

Skim-Milk Cheese.

At the recent American Dairymen's Association Prof. L. B. Arnold expressed his most emphatic hostility to skim-milk cheese, observing that he attributed the depression in the market during the past season very largely to the sale of that article. It has produced a feeling of uncertainty, he said, among consumers; many dealers are accustomed to palm off skim cheese for whole milk cheese, and this tendency has served to paralyze the market. Although Canadian cheese is inferior to good American factory, it is safe to assume that Canadian cheese is made from whole milk; hence it is that there has been a brisk demand at New York for this cheese, and our own make has been crowded out. In the discussion which followed these remarks, the expression of a feeling of opposition to the manufacture of skim milk cheese was quite unanimous. Indeed this was more generally the attitude of the convention, than of any preceding convention for the past five years. Among the most valuable papers of the first day was a paper by Seth Bonfoy, of Herkimer county. Mr. Bonfoy is known as "the prize cheese maker," and his recipe for making a perfect article was heard with close attention. It was as follows: A premium cheese is made when the milk has been secreted by the cows in a pure atmosphere, and has been secured in a cleanly manner; when everything about the factory is in apple-pie order, and when 9 or 9½ pounds of milk will make a pound of cured cheese. The milk must be set at 82°, with perfectly sweet rennet, that has been prepared with pure soft water, that is pungent, yet without odor, and that will coagulate the milk in 30 minutes to a consistency not too firm, but of a brittle texture, that will require careful handling and cutting.

If the curd is correctly handled, the whey will be of a clear, bright straw color. The curd should be matured in a temperature of about 92°, finished at 94° to 98°. The time of finishing should not exceed the limit of from 30 to 60 minutes. The heating must be slow and quiet, and from the sides of the vat. The curd should be handled with the hand in a light and rather lively manner, yet very carefully, while warming. Thus is condensed the method of a successful maker.

Prize Cheese.

Mr. B. F. Adams of Austin, Minn., the most successful exhibitor of cheese at the late American Institute, gave his method of manufacturing as follows:—The cows whose milk was used in the manufacture of the cheese, were fed entirely on the wild grass of Minnesota. I receive the milk but once a day—in the morning. The farmers set their milk in cans put into a tub of cold water, and cool it down to the temperature of the atmosphere by agitating it well with a large dipper. Morning milk the same in a separate can. The milk when received at the factory in the morning is weighed and strained through two thicknesses of bandage cloth and kept constantly agitated in the vat until the rennet is added; this is to prevent the cream from rising. After the milk is all received, the

heating process commences, which is done by steam from a five-horse power boiler, and conducted through pipes under the vat. I first heat the milk to a temperature of 82 deg., then I add very little coloring prepared of annatto; next I put in rennet enough to cause coagulation in fifteen minutes; rennet is prepared in cold water, cut up in small pieces, and sufficient salt added to keep sweet. After the whole coagulated mass becomes hard enough, I cut both ways and let stand until the whey rises, when the scalding process commences. Scald very slow until a temperature of 90 deg., then retain it at this temperature until cooked and acidity begins to develop on the whey; the whey is then drained off and the curd dipped into the curd sink and salted immediately, using two and one-half pounds of salt to one thousand pounds of milk. After the curd is cooled to the temperature of the atmosphere then put to press, and bandage; press for about eighteen hours, then take out of the hoop and put in the dry room. I use no grease in the curing process, nothing but a small piece of bandage cloth—a good rich cheese will grease itself enough. I keep my drying room at a temperature of about 56 deg.

How to Purify Rancid Butter.

The following methods of purifying rancid butter appear in Professor X. A. Willard's "Practical Butter Book" recently published:—

For this purpose it should be melted in twice its weight of boiling water and well shaken with it. By this means the acids are dissolved and partly volatilized, the rancidity being thus removed. At all times butter may be purified by repeated melting with fresh portions of water, the pure oil rising to the surface, leaving the impurities in the water. The butter loses its consistency by this operation, but that may be restored to it, at least to a great extent, by pouring it, when melted, into a large quantity of ice-cold water.

A process for purifying rancid butter was invented a few years ago, which consisted in cutting the butter into small lumps and spreading them out in a great vat. Then hot water is thrown down in a shower from a considerable distance upon the mass. The melted butter rises to the surface and the impurities are drawn off with the water. Then the butter is subjected to a shower of cold water, and in this way, by repeated washings, according to the rancidity of the butter, it is freed from the objectionable taste and odour, and finally it is again worked and salted.

As the formation of the badly-smelling volatile acids depends upon the presence of casein, this mode of purification removes the injurious ingredient. It must be remarked, however, that the butter becomes less pleasant to the taste, the water having taken up the small quantity of foreign substances which give to fresh butter its fragrance and agreeable taste. Some of the compounds of caprylic acid have a fragrant odour like that of pine apple, but the smell of capryline itself is little known.

Testing Milk.

A correspondent of the *Country Gentleman* gives the following description of a new method of testing milk, which appears to be coming into vogue among dairymen. He says:—It consists of a series of small cups arranged in a water-bath or receptacle, so that the contents of the vats may be heated either by steam or water. As the milk comes to the factory, a given quantity is taken from each patron's can and heated in these cups until a temperature of about 90° Fahr. is reached. At this temperature it is found, by practical experiment, that the smell of garlic, putridity, fever, or disease of the udder will each unmistakably manifest itself by developing the peculiar odour which characterises each of these impurities. Whenever milk is found to be unsound, it may be rejected, so as not to taint the whole vat of good milk with which it comes in contact, and at the same time the cause of the impurities can be made the subject of investigation. If the milk shows no signs of being unsound or in bad condition, but is suspected of being skimmed or diluted with water, the sample in each cup is coagulated by adding rennet, the curd compressed to expel the whey, and the curd then weighed. By knowing the standard weight of the curd of a given quantity of milk, and comparing it with the sample tested, the variation shows the amount of water which has been added, or to what extent it has been skimmed, and the per-centage may be deducted from such patron's milk. Thus the difficulty heretofore encountered by adding sugar, salt, or any other ingredient, to increase the specific gravity of watered milk (two points in which the lactometer entirely fails, and which could be detected only by a thorough chemical analysis), is wholly obviated, and dishonest patrons cannot escape detection in their fraudulent practices. Experiments with the above "tester" have revealed not only putridity, but milk that has been skimmed; other samples that have been watered, with sugar and annatto added.

Veterinary.

Veterinary Dentistry.

Disease of the teeth in domestic animals is indicated by their drinking freely but refusing to eat, or eating with difficulty, by often ejecting partially masticated food from the mouth, by standing still, the head hanging down, the eyes indicating suffering. Caries of the teeth is not so common as in man, but the teeth of oxen and horses are sometimes broken by hard substances in their food, and by drivers and caretakers clubbing them about the head.

I remember the case of an ox which had two of his molar teeth broken and the mouth otherwise injured by a blow from a handspike in the hands of a cruel drunken driver. He soon became unable to work, was turned out, became very emaciated, was useless for the season, but recovered. Also the case of a horse which had two inferior molar teeth broken with extensive fracture of alveolar process by a blow from the butt end of a heavy whip. The animal was of no use that season, was not properly fed nor cared for, but ultimately recovered, the fractured part sloughing off. Another case of a hog which had several of the molar teeth broken by a boy striking him on the side of the head with a stone. The hog became very emaciated and died about a month after having received the injury.

Had these cases received skilled veterinary treatment and care the animals would have been restored to health and usefulness in a short time, and saved from severe and lengthened suffering. Surely lessons on our duties to the lower animals should be taught in our public schools.

When the pulp cavity of a tooth is penetrated by caries or violence the soft part should be removed by a suitable instrument, the cavity treated with carbolic acid, filled with cotton well packed in, left for some days until it appears the foramen is healing; then, after careful cleaning, the cavity may be filled with amalgam, made of tin filings, 3 parts, silver filings, 1 part, worked to a thick paste with mercury. In a few hours it becomes so hard as to endure several years.

In any case when there is alveolar abscess, or extensive inflammation of the alveolar process, the diseased tooth should be extracted and the animal fed on soft food some days.

In some cases it may be necessary to protect the wound so as to prevent portions of food being forced in, which would cause severe pain and retard the healing.

An amateur may successfully fill a tooth, but where available, it is wiser to engage the services of an experienced "professional."

Toronto, Ont.

W. BRODIE.

Prevention of Foot-Rot in Sheep.

In a paper read by Mr. Balfour, Fife, before the Scotch Veterinary Society, the following suggestions on the prevention of foot-rot in sheep were made. The prevention of foot-rot is a subject which should engage more attention than it has up to the present time. Of course, it will be understood that removal from a wet to dry sound pasture is of pre-eminent importance, and from luxuriant to a shorter kind of grass. In highly-cultivated farms the removal of sheep from luxuriant pasturage is often a matter of impossibility. When such is the case, experiments have been tried to harden the hoofs of the sheep, that they might resist the action of moisture, and some of these have been to some extent successful. The following process will be found to answer the purpose very well: A wooden trough of the following dimensions is to be made—length, 9 feet; breadth, 2 feet; and depth, 1½ feet, with lid and lock, in order that it be locked after it has been used. Into this trough a solution of arsenic (arsenious acid) of the following strength is to be poured, sufficiently deep to cover the feet of sheep as they are driven to it—namely, one pound of the arsenic to five gallons of water. Arsenic of itself is but slightly soluble in water, and in order to dissolve it readily it is necessary to boil it along with an equal quantity of an alkali such as the common washing soda. The arsenic and the alkali should be put in the boiling water together; the boiler must be large, in proportion to the quantity of water it is to contain, and for the reason that the liquid is apt to rise suddenly, because

the carbonic acid, combined with the alkali, is disengaged by the process of boiling, and during its escape causes rapid ebullition. For the same reason the water, after the addition of the powder, must be slowly boiled for some time, or until the arsenic is entirely dissolved. The sheep are to be driven through the trough containing the arsenical solution once a week, if it is thought necessary to repeat it oftener, the liquid is to be weakened in strength by the addition of water. To prevent the sheep jumping out of the trough as they are being driven through it, it will be necessary to place hurdles at the sides, and it is important that it be borne in mind, that the sheep be folded for a short time in a place where neither they nor any other animal can have a chance of grazing, or the consequences might prove disastrous. *English Farmer*

Grease.

EDITOR CANADA FARMER. I have a fine mare that is very bad with "Grease Heel," and I am afraid it is going into what is called "Grapes." Would you be kind enough to favor me with a recipe that will cure her, and oblige yours truly,
SUBSCRIBER.

Grease is one of those maladies that are certainly very difficult to cure, when once firmly established, and this appears to be the case with "Subscriber's annual." Presuming that he has already tried all the common and more simple remedies, we submit two different methods of treating the disease in its advanced stages, for each of which good results have been claimed.

1st. Make poultices of powdered charcoal, bran, and ground linseed, equal parts. Apply this during two days and nights. Then wipe the legs off without much friction, and apply twice daily a portion of the following mixture: Nitrate of potash, oil of turpentine, sulphuric acid, of each four ounces; vinegar, one quart. Add to this as much powdered sulphate of copper as it will saturate. By way of internal treatment, the following alternative powders may be mixed in the feed once a day to each horse. Sublimated sulphur, one ounce; sesquisulphuret of antimony, half an ounce; nitrate of potash, two drachms; mix.

2nd. Give your animal a drench composed of raw linseed oil, twelve ounces; calomel and tartar emetic, of each one drachm; iodide of sulphur and potassium, of each one drachm. Mix these thoroughly together in a smooth-necked bottle or drenching horn, and give every fifth day for three times, and stop for one week, and give again in the same manner, and stop. Give one drachm of powdered sulphur, blood root, and sulphate of iron in the food, slightly dampened, every night. Cleanse the heels well twice a day with a strong lye, made by dissolving sal-soda in boiling water. This being done, if there is any proud flesh perceptible, touch over it, by means of a camel's hair brush, a caustic composed of nitrate of silver, one drachm, cold water, one ounce. In fifteen minutes after, wash the heels over with sulphuric acid, two fluid drachms, mixed into two quarts of cold water. When the parts are thoroughly dried, which will be in twenty minutes, dress the heels with an ointment composed of oil of glycerine, three ounces, crude carbolic acid and iodide of sulphur, of each two ounces, well mixed together. This, no doubt, will, if properly applied, be found efficacious in removing this trouble you complain of, but will have to be followed for some time, in order to produce the desired effect. Feed on green and vegetable food during treatment.

Lymphangitis.

(Concluded from last month.)

SYMPTOMS.—The early sign of constitutional disturbance is a shivering or rigor, in some cases very severe. To the casual observer, the first symptom that attracts attention is lameness and swelling of the limbs. The swelling usually appears on the inside of the thigh and extends down the leg, the line of the lymphatics feels hard and corded, and the least pressure with the hand causes the animal to evince pain quickly shown by his lifting the limb and extending it outwards. The swelling soon increases and the whole limb becomes swollen, so that the enlargement of the lymphatics cannot be distinctly seen. The pulse is strong and quick and the breathing very much increased; the bowels are generally costive, and the urine high colored. In very severe cases, sweat will bedew the body and the poor animal suffers intensely from general constitutional

irritation. The appetite is gone, but the desire for water is great. If relief is not afforded in due time, a serous effusion will exude from the swollen limb and occasionally the inflammatory action will result in the suppurative process. Generally, the horse retains the standing posture so long as the acute symptoms are present. Sometimes, however, he will lie down, and owing to the condition of the limb is unable to rise without assistance. When the disease is confined to the forelimb, the symptoms are of a milder form.

TREATMENT. Acute lymphangitis requires active and careful treatment. In all cases where the patient is strong, a full dose of purgative medicine should be given, as—eight to ten drachms of Barbadoes aloes; or seven drachms of aloes combined with one drachm of calomel answers very well in acting quickly upon the bowels. Encourage the patient to take plenty of cold water, in which may be dissolved a little nitrate of potash, or carbonate of soda. Clysters of soap and water should also be given occasionally. In severe cases, ten drops of tincture of aconite should be administered every three hours. There may be exceptional cases where blood-letting is demanded but we believe that most cases can be more successfully treated without blood-letting.

As to the local treatment, fomentations of hot water should be applied for an hour or two at a time, and the limb afterward carefully bandaged; and when the pain is extreme, we have seen considerable relief afforded by the application of laudanum and extract of belladonna to the inflamed absorbents.

When the acute symptoms are relieved, friction to the part, gentle exercise, and carefully applied bandages are useful. Also, use diuretics freely; but until signs of recovery, the animal should be kept perfectly quiet.

During the severe weather of our winters, if the patient is not in a comfortable stable, it is better to use anodyne liniments and warm and dry flannels to the limb rather than have recourse to fomentations. If pus forms, it must be allowed to escape.

Small washings of bran or other cooling diet is all that should be given in the early stages, but when debility comes on, it will be necessary to use a more nutritious diet. A run at pasture for a few weeks is often found to be beneficial.

A great many horses in this country are rendered useless from the application of blisters and irritating liniments often prescribed by persons altogether ignorant of the nature of the disease. Such procedure cannot be too strongly condemned in the treatment of lymphangitis.

Repeated attacks are apt to end in a thickened condition of the leg, which is known as Elephantiasis; the effusion becomes organized and the parts can never be restored to their normal condition. But the very worst of cases may be palliated by moderate work, careful feeding and the occasional use of diuretics.

We have endeavored to describe the great exciting cause of lymphangitis which disease may be easily avoided in many cases by a little judicious care, as by lessening the quantity of food when hard worked horses have to stand idle for a day or two, and giving moderate exercise.

DILATATION of the lymphatics sometimes occurs, the walls become hypertrophied and varicose, and this state may proceed from obstruction of the small tubes in the lymphatic glands, or other diseased conditions resulting from prolonged irritation. Rupture of the vessels may occur as a sequel to dilatation. A varicose state of the lymphatic glands has been found to exist in confirmed cases of elephantiasis.

TO PREVENT ABORTION IN COWS.—Dr. McClure's remedy to prevent abortion in cows by giving tone and strength to the system, is.—Powdered sul. of iron, 2 drams, ginger and gentian each half an ounce; mix, and give one dose night and morning for a week, then delay a week and commence again. This remedy has been quite successful around Philadelphia.

A "FACT" FOR FARMERS.—It may not be generally known that the seed of the sunflower is the most infallible remedy yet discovered for the speedy cure of founder in horses.

The direction which we glean from a brief article upon the subject in the *Essex Banner*, says:

"Immediately on discovering that your horse is foundered, mix about a pint of the whole seed in his food, and it will perfect a cure."—*Maryland Farmer*.

We believe the above to be pure fudge.—ED. CANADA FARMER.

The Poultry Yard.

Ducks Without Water.

Has it occurred to many of our readers that ducks can be raised advantageously upon premises where there is neither pond or stream for their amusement? The common idea is, that such a convenience is absolutely necessary to their thrift. But we have the assurance of a breeder in Massachusetts, who has tried the experiment for three successive years, that this notion is altogether erroneous. Our domesticated ducks, like the wild ones, prefer a brook or lakelet to pass their leisure in, and a swampy piece of ground through which a river-branch sluggishly flows affords a good deal of animal food for this race, which helps to keep them during the summer.

But the party spoken of above has no open water on his farm, and he has raised several scores of common ducks in the past three seasons among his flocks of barn-yard fowls, which have turned out as profitable, so far as he can calculate, as the chickens he has marketed in the fall and winter. These web-footed birds have been fed with the other poultry, and all his ducklings are hatched and reared by hens. He makes no distinction in feeding as to variety or kind of food. All his poultry are "in common," and all have the same chance at the grain, the grass, and the scraps from the house; but he has never provided his ducks with any water, except what his fowls have at hand for drink; and he says he knows no difference in their thrift, from the shell upward to killing time.

If the common mongrel duck will thus do well without water to wash and swim in, why may not the Pekin, the Aylesbury, the Rouen duck be bred to similar advantage? This kind of poultry is fully as profitable as are hens, and if it can be raised without pond or stream on the premises, why is not this experiment worth the trial by others?—*Southern Planter.*

Hay for Poultry in Winter.

The *Poultry World* says:—"Bulk in food is required for health, as well for poultry, as man or animals. Rich and concentrated food is not really digested, and invites disease. It is stated that, in importation, the life of a valuable horse was saved, on shipboard, by feeding to him cut shavings in absence of hay, in order to dilute, so to speak, his grain diet. Some think a craving for bulky food is one chief cause of feather-eating in winter, or among fowls confined. Now, just try and secure a good supply of second crop hay, short, and, if possible, containing clover. Cure only enough to preserve, and your fowls will eat a portion of it all winter, when they would turn away from stale cabbage. What is not eaten, will furnish untold amusement in scratching over. Remember in winter, if poultry stand on one leg, unemployed, all day, they are disposed to have the 'blues.' Idle meditations lead always to bad habits; while a healthy mind in a vigorous body suggests business, which with fowls means winter eggs and early chickens. Secure your raven this month, before it is too late, if you have not already attended to the matter, and before severe frost, if possible, for it is injured in quality by being frost-bitten."

The advice seems feasible. Solid food in the stomach must be extremely trying to the digestive organs, and anything that will tend to divide and subdivide the mass in order to the more effective action of the gastric juice, cannot but prove beneficial.

Selection of Fowls.

The *Pacific Rural Press* gives the characteristics and qualities of various breeds of fowls as follows:—Of the larger breeds, the Cochins and Brahmas are the most desirable. These are both large and heavy varieties, are very docile, and are good winter layers, though their propensity to sit in the hot season somewhat lessens the annual number of their eggs. When good feed and warm dry quarters are provided, no breeds will show good care better than these.

For laying alone the Leghorns and Hamburgs surpass all others in the number of eggs; being non-sitters they improve the time others use in sitting and raising young. The Leghorns lay the larger egg of the two, and have yellow legs, while the Hamburgs are blue legged and their eggs rather small.

For both eggs and flesh we have the American breeds, the Plymouth Rocks and Dominiques, also the French Houdans, Crève Cœurs and La Flèche. All these five are large-bodied fowls and first-class layers. The French claim the finest quality of flesh, but they are black and white legged, and non-sitters, while the American breeds are yellow legged and good sitters.

Games are liked by a great many. They are good layers and excellent mothers; but the size and the color of their

legs is against them. Bantams make nice pets, but they are not at all profitable.

There is a great difference between the several varieties of each breed:—Of the buff, partridge, white and black Cochins, we have found the Partridge the best layers. They sit less than the buffs, keep cleaner than the white, and surpass the black in size.

Of the Brahmas the dark are preferable. They are an improvement on the light, and, like the Partridge cochins, they are not such bad sitters, consequently they are better layers and of a more business-like color.

The white, brown, black and Dominique Leghorns stand in general favor in the order in which we have named them. The first are the largest and lay the largest eggs, but their white plumage is easily soiled, and the colored ones are preferred by many. The Hamburgs come in for their share of favor as well as dislike. They will find their own living almost anywhere, and being great layers and non-sitters they stand high with many, but their eggs and bodies being small, they are not always favorites. In fact, it is hard to tell which breed would stand first, were all interested to give their opinions.

Killing Fowls.

In an editorial note to the letter on poultry killing, says a writer to the *Live Stock Journal*, you invite your intimated readers to publish the *modus operandi* by which poultry can be killed with the least possible amount of pain. It is a curious fact, as you observe, that cocks armed in battle with the fatal silver spur are often killed as suddenly as if struck down by a thunderbolt; and not less curious and true that when death takes place at the end of the longest and severest of the conflicts it is unaccompanied by any of those writhings and contortions so painful to witness when killed by the knife. Many an old cocker could doubtless fix on spots where a slight cut or thrust would instantly



extinguish the vital spark. Indeed, I know one medical gentleman whose father was noted for his breed of Game fowls, and which are still retained in their purity, as well as the much coveted box of spurs, and which have long since ceased to be used except in the hands of the old groom, who kills the feathered warriors ignominiously by passing one of the spurs into the head, and in an instant the bird is as still and inanimate as a tombstone, yet so delicate is the operation that I feel any instructions of mine would not only prove abortive in practice, but would indirectly be the means of inflicting additional cruelty on the poor birds operated on by those who usually have to kill poultry, the generality of whom could no more be instructed to perform it, without ocular demonstration, than could our common slaughter-men perform the lightning-like death-stroke of the Spanish matador. What is required is some simple system in poultry-killing, that can be practised by the meanest capacity, and for the public to set their faces against those vendors whose birds are killed in an objectionable manner; and the cleanest and most simple method I have hitherto seen practised is this:—Make a strong linen bag (A) made cone shape, size and length to take in an average sized fowl's body, his head and neck protruding through the small end; the drawing string (C) is now drawn taut, leaving out the tail and legs. Around the latter the end of the drawing-string is twisted, so that the bird is now prevented from moving in any way, and yet free from any undue pressure or pain. The bag is now suspended by the hook (B), and taking the fowl's head in your left hand pass a cutter (made similar to an old-fashioned sugar nipper, with concave bites) up to the junction of the head, so that the cutter rests on the skin, the feathers being pressed towards the head, give a firm grasp to the cutter-handles, which separates the head easily, and at the right place, fixing a pan under to catch the blood. If cutting the head off is objected to, then in place of the cutter take a sharp penknife, and whilst holding the head, thrust it into the throat, marked B, making a short transverse cut, yet not long enough to cut out through, and it will presently bleed to death without the usual fluttering and smearing its feathers with blood; for breaking the necks of fowls or birds, it requires a sudden jerk and stretch at the same time in order to kill them quickly.

The Apiary.

Puro Honey.

That there is a knack in preparing honey, few will dispute who have met with so many varieties in color, purity and flavor at our various county and provincial shows. Like everything else, the art must be studied, and it is only those who give their particular attention to details, that may expect to excel. Here is the method followed by Dr. F. A. Baker who recently succeeded in carrying off the first honey prize at the New York Institute:

The plan is simply to keep a very strong colony queenless during the period of the greatest flow of honey. All apirians know that a virgin swarm will work with more energy in building comb and storing honey, than one with a full supply. It is not uncommon for strong families, with everything needful for storing honey in surplus boxes, to loaf about the hive, until a few empty frames are given between the full ones, when they will soon be filled, but, being in the queen's chamber, she immediately performs her maternal duty and you get no honey. The law is immutable, in their allowing no empty space between broad combs, and the law impelling the bees to fill the space with comb acts with like force in inducing to the queen her duty. By virtue of cause and effect, if the entire hive is made into space, it is but fulfilling that law for the bees to promptly fill it with comb and honey, if, perchance, it is in abundant supply, but madam queen being present, we must allow a considerable force to assist in attentions to her royalty; dethrone her and supply the colony with material to make a new one, and yet allow none to mature for a period, and we shall have our boxes filled with the beautiful nectar. The operation is to put two large swarms, without queens or comb, into a hive filled with empty sectional frames or honey boxes, and give one broad comb at one end of the hive, and before the new queen is hatched, remove the comb and give them another. When the second has become fertile, the greatest flow of honey being over, remove the honey frames or boxes and fill the hive with combs or empty frames as the fall season for honey may indicate. The queens and broad combs can be utilized to advantage, which any intelligent apirian will understand.

SEASONABLE HINTS.—Through the winter months the bees require no care in the cellar house. They only ask to be in darkness and quiet. If they are on their summer stands, and have quilts or carpets over their frames, they will not suffer, though the entrances are blocked with snow. It is well, however, to see that the entrance during a thaw does not become stopped with water and dead bees, which a sudden cold wind may convert into ice. While you have nothing to do for the bees directly in this month, it is time to plan for another season's work, and prepare your hives and honey-boxes. We hope the experience which some of you have had will not be repeated this winter, viz., your bees die at such a rate that you will need no new hives. If you have been careful, we are sure you will not.—*American Bee Journal.*

PRUNING BROODS.—Pruning brood combs is generally quite unnecessary; in fact, is more injurious than otherwise. If they even require excision, it can only be when they are so overcharged with pollen as to render breeding impossible, in which case the operation should be performed in the spring. Pruning them after the bees have swarmed and cast, is very unwise for several reasons. First, there is a possibility that, during a glut of honey, the bees would build drone combs exclusively, if any; second, that having to replace the excised comb, they would build drone comb, they would be less likely to yield a surplus in their super; and third, there is the undoubted fact that bees winter much better in old combs than in new ones, because, being coated with so much silky fibre, they are the warmer of the two; and again, there is the chance that in an unfavorable season they may be unable to build any comb at all.—*British Bee Journal.*

SHAKING BEES FROM COMBS.—Mr. J. M. Marven, in the *American Bee Journal*, gives the following way to prevent irritating bees in brushing from the combs, in sub-dividing:—Use more care in subdividing bees in long, deep or large hives. It is generally best to manage the hives, extracting honey, making swarms, etc., during a yield of honey, and before it is sealed with wax, that all the bees may fill their sacs with honey; which they will do if there is enough uncapped, and they are distributed properly. If the honey is not in a fit condition, or of sufficient quantity, food may be given to subdue the most vicious stock. The brush is one or more grape or plantain leaves rolled loosely, sometimes the end trimmed. Weeds, grass, broom, feathers or brushes may be used; and if the articles are scarce, or only one at hand, dip occasionally in water to wash off the odor, which enrages badly managed bees. Use the old-fashioned native or black bees, with your deep frames, that drop off the comb like shot off a shingle, at the least touch.

The Agricultural matter published in the WEEKLY **GLOBE** is entirely different from that which appears in THE CANADA FARMER.

CONVASSING AGENTS WANTED.—First-class men, of good address, steady, and pushing, to canvass for the CANADA FARMER. Address, stating employment, previous engagements, age and references, Publishers of the CANADA FARMER, Toronto.

The Canada Farmer

TORONTO, CANADA, MARCH 15, 1876.

Canada at the Centennial.

It is very gratifying to be able to say that the response of our people to the invitation of the Government has exceeded the most sanguine expectations. The Canadian display at Philadelphia may, even already, be counted upon as a complete success. The agricultural buildings will cover an area of 10,000 feet, in which will be shown the products of the forest, the farm and the garden, including fruits, which are to be sent in as they come in season. In the same department will also be found stuffed specimens of animals, poultry, fish and birds generally, as well as agricultural implements, of which the display from Ontario will be splendid. In the floricultural department flowers, like fruits in the horticultural, will be taken in as they come in bloom. The cattle show is to take place in the fall. Canada occupies 1,000 feet space for her carriage and other manufactures. The glass cases in this latter department are to be ten feet long, three feet wide and ten feet high—the ornamental work increasing this height to thirteen feet. The counters also are each to be ten feet in length by three in breadth, and covered with glass. All these latter are being now made in Canada, and so constructed that they can easily be put together or taken apart, the intention being to use them ultimately in fitting up a National museum at Ottawa. In the main building Canada will occupy a space of 24,000 square feet, which will be devoted to metallurgy, the finer manufactures, and all articles pertaining to education and science, including specimens of the books, apparatus and appliances used in schools, colleges and charitable institutions. The space allotted to machinery in motion is 2,500 feet, the original application for a larger one having been necessarily reduced for want of room. Other machinery, not in motion, will be accommodated in the main building, and will include ship and other models. In the Art Gallery Canada will cover an area of 4,400 feet, 2,000 of which will be devoted to a photographic exhibition alone.

Intending exhibitors will bear in mind that all articles must be at their respective stations not later than the third week in March. Two special trains will be made up, one from Ontario, the other from Quebec, and run directly to Philadelphia without delay or detention. From the maritime Provinces, goods intended for exhibition will be transported by one of the Government steamers, with a crew of 24 men and officers. Leaving Halifax as her starting point, she will call at St. John, N.B., where all articles from the other provinces will be expected to be ready for shipment. Arriving at Philadelphia, her crew will be employed in arranging the Canadian departments, and during the exhibition the vessel will be utilized as a lodging house for all Canadian employees. Everything must be on the grounds and arranged by the 1st of May. The Exhibition opens to the public on the 10th of the same month.

Farmers' Clubs.

It is comparatively speaking but a few years since these institutions originated in Canada. Their beginnings were small, and in many, perhaps a majority of cases, their onward and upward progress was much retarded by a combination of causes, not the least formidable of which was a deep-rooted prejudice against everything savouring of novelty in agriculture. Farmers, particularly the older ones, could not be disabused of the idea that, theoretically or practically, there was really little, if anything new to be learned in the art. The entire problem to them was in

a nutshell. Given a farm, a span of horses, a plough and harrow, some seed, and a pair of stout arms; all the rest was accomplished by a necessary, natural law, and followed as a matter of course. Did a portion or all of the crops fail? Well, it could not be helped; the season was too wet, or too dry; and far be it from them to interfere with, or grumble at the doings of Providence. They would just try again in the good old-fashioned way, and trust to luck for the results. There were indeed, happily, some exceptions to this fossilized class, men of intelligence who, profiting from reading and observation, put their knowledge into practical effect, and whose lands in consequence, afforded a striking contrast to those around them.

Fortunately for the country and the cause, these days are over. Advancing education, scientific research, wonderful results brought to light through the medium of enlightened experiment, have prevailed and banished all the fettering superstitions of the past, so that it is no exaggeration to say that our farmers of to-day occupy a widely different and very superior footing to that held by their ancestors in days gone by. And these gratifying results are in a large measure due to our Farmers' Clubs. At these, young men, and many old ones too, meet at stated periods for interchange of thought and conversation about their important calling; experiments are recorded, their varied results noted and discussed, and general deductions made from the whole. New subjects and experiments are then suggested for similar investigation at subsequent meetings, until every industry of the farm has been gone over; each member profiting as well from his neighbor's experience as from his own. Thus new truths are discovered, errors corrected, new principles established, and improvement on every hand is the result.

It is very gratifying to notice the growth of these clubs both in number and influence throughout the Dominion. Their spread augurs well for the future agricultural prosperity of the country. We should like to see more of them established however; there is still plenty of room, and we would urge upon the agriculturists of every town hip in the province which cannot yet boast of one, to set about forming the nucleus. The importance of such gatherings, when properly conducted, cannot be overestimated. Ordinary, casual conversation between two neighbors has, we know, ere now been productive of the most beneficial effects. A single remark dropped sometimes inadvertently by the one and supplemented by the other, has frequently led to ideas and plans of improvement never before thought of by either. Farmers' Clubs are just a repetition of the same thing, but on a larger, and consequently a better scale, where greater ranges of thought come into play, and more varied experiments are related.

We have, in one or two instances only, heard the complaint that it seems some times difficult to keep clubs long in existence, and the reason assigned was that there was so little new to be learned at the meetings. Now this is evidently the threatened insertion of a thin edged evil which must be cautiously avoided. He is a wise man who can receive no farther instruction. The complaint in fact reflects rather severely on the complainant. Is he himself doing his duty to the club? Is he experimenting, noting and recording results as they occur, and maturing his judgment upon the successes or defects that attend them, with their causes? If so, and other members are doing likewise, depend upon it there will be no listlessness or lack of interest at the meetings. If not, then he should shoulder his share of blame for their failure. Possibly too, as we took occasion to suggest in a previous number, the meetings are held too frequently to allow of actual experimenting during the intervals. This could be easily remedied by convening quarterly instead of monthly. And then again what about the dairy department, floriculture, and many of the lighter branches of horticulture, which, in practice, most commonly fall to the lot of the ladies? Are they, the ladies, invited to the club meetings, and are the club meetings fittingly constituted to receive them, for an interchange of opinion and experience on the departments which come more directly under their charge. If so, good. If not, why not? We make bold to say that, in the branches enumerated, and others, they know, from actual observation, much more than the men, and their suggestions would prove invaluable. Like every other undertaking, Farmers' Clubs, to be interesting and profit-

able, must be composed of active, energetic members, thirsting for knowledge and zealous to avail themselves of it from every possible source. Otherwise, they will surely dwindle away into insignificance, and those who should profit from them, will as surely be left in the background. Already, every department of husbandry has been very much improved and benefitted even within a few years back, through the facts elicited at these conventions, and, with such a wide field for operations still before them, who can doubt that the one half has not yet been accomplished that may be.

The Arrangement of Flowers in Bouquets, &c.

A love of the beautiful is one of the accompanying evidences of an advanced refinement, and that being, whatever else may be his accomplishments, who does not feel himself instinctively attracted to the lovely in nature and art, may fairly question the quality of his senses and the soundness of his heart. The proverb "Show the man who never laughs," has in one form or other found its way into the copy-book readings of almost every nation under the sun. Should the sentiment ever, unfortunately, become stale or insipid, we should only be immortalizing ourselves and benefiting our fellow-mortals at one and the same time by suggesting as a substitute: Shun the being who cannot love flowers.

In dealing with the question of the proper arrangement of flowers in bouquets, or indeed the *effective* combination of colors under any circumstances, one or two leading principles must never be lost sight of. The first and most important of these is that every color has its complement; in other words, its opposite, or that which differs from it in the highest possible degree. Thus the complement of green is red, and *vice versa*; of orange, blue; of yellow, violet, &c. Another most important principle, and one which follows directly from the former, is that the more closely we combine these complementary colors, the more intense will the contrast be, and as a consequence the greater will be the effect. This is easily illustrated. Let any of our lady readers, for instance, on their next shopping excursion, examine a few pieces of very red flannel or dress goods; then turn their attention for a few minutes to articles of a green color, and immediately afterwards re-examine the red. They will notice at once that the latter is very much improved by the diversion. The reason is obvious. Green is the complement of red, and hence each of these colors is improved, or intensified, by being contrasted with the other. A very shabby black vest is made to appear all the shabbier when brought into contrast with a new black coat, but remove the coat and let the contrast lie between the same vest and a pair of white trousers, and the respectable appearance it immediately assumes is simply amazing. We need not multiply instances. Combine then the two principles enunciated and we arrive at a general rule which will hold good under all circumstances, viz.: To select those colors which are most nearly the complements or opposite of one another and group them as closely together as possible. Thus in arranging a bouquet, green flowers should be placed next those of a reddish color; blue should come next orange; yellow should contrast with violet, &c. Should the green be of a blueish shade, in other words, a blueish green, the complement is a reddish orange; a yellowish green contrasts with a violet red; a blueish violet with an orange yellow, &c.

By following the directions thus briefly hinted at, the choicest effects are produced, and the study, especially to our fair readers, will prove one of the most charming and interesting imaginable. We might extend our remarks to embrace the subject of laying out flower-beds and borders, but must defer further observations till some future occasion. A.

The Lactometer.

From a series of experiments recently conducted by Mr. Bourgognon, an analytical chemist of New York, it appears that the lactometric system of detecting adulterated milk by its specific gravity, is unreliable. The city authorities, having fixed the specific gravity of pure milk at 100° and assuming that the quality improved or declined with a rise or fall from these figures, had adopted the system, and obliged all vendors to submit their milk to

the ordeal of testing ere it was passed as marketable. Mr. Bourgognon's experiments however showed the principle to be wrong, and to prove just the reverse of what the authorities believed. Taking a sample of good, pure milk, which registered by the lactometer 130°, he adulterated it with water, and tested again, when he found the specific gravity reduced to 100°. Repeating the experiment with another sample of the same pure milk, but adding this time cream instead of water, he again applied the test and found the specific gravity lowered precisely as it had been by the water, viz., to 100°. Here was a poser for the civic dignitaries. Two articles of milk; the one greatly impoverished; the other as greatly enriched; and yet, according to their theory, both were of equal quality. Prosecuting his researches still further, Mr. Bourgognon discovered that pure milk of the standard specific gravity, 100°, yielded only four per cent of cream—a very poor percentage. He also found, in five separate analyses, that the higher the registry by the lactometer, the less was the percentage of butter. Milk registering 130°, gave only 3.03 per cent of butter. That at 103, 3.46 per cent; at 92°, 4.33 per cent; and two different samples at 90°, gave respectively 6.30, and 6.2 per cent. In another comparison of two different qualities of milk, one at 90°, the other at 130°, the former was shown to have all the enriching qualities, except sugar, in larger quantities than the latter, and even the sugar difference was only about .07 per cent, or 1 part in 70,000. These experiments and analyses would seem to indicate that the specific gravity of milk is no reliable criterion of its quality.

Trapping Skunks.

The lion is said to be 'lord of the forest,' but if solitary, secluded dignity constitutes any of the claims to that honour, his diminutive rival, the skunk, may fairly be said to divide it with him, for it literally "walks the course." People, as a rule, and for that matter, dogs too, like to meet danger *vis-à-vis*. The lion and tiger have been thus confronted, and bearded in their dens. Not so his skunkish majesty. The tables are turned thoroughly; in fact Nature completely reverses herself, when, ever the battle has begun, one of the attacking parties wheels, and the position becomes *dos-a-dos*. The English officer, who stabbed a dog for biting him, excused himself for not reversing his weapon, on the ground that the cur had not come at him tail first. He would have had no such excuse at command, had 'my lord of the bush and scent' been the first offender, instead of Towser. The fact is, skunks are the most formidable night depredators man or beast cares to meddle with. A hand-to-tail (for that is the word) fight with them means not only defeat at once, but an enduring memento of the same as well, that suggests immediate and promiscuous burial of things all round—the bodily apparel as well as the body it contains—for a time. We have known a kindly old gentleman of obese proportions and dignified demeanour, kept shivering in his night-clothes two mortal hours, outside, at the dead of night, while one of the wretches kept sentry on his door-step.

The food of skunks is insects and wild fruit. In the first respect, they may render good service by destroying other pests; but when it comes to the hen-roost, as it invariably does, why, then, they themselves become the pests, and must be got rid of. This may be done safely and effectively by means of a good steel trap which is to be set as follows: Take an ordinary packing-box about 3 ft. x 2 ft., and a foot or fourteen inches high when laid on its side. Knock out both ends, and out of the upper side, near one end, cut a square or round hole having an area of say half a square foot. Make then a second box large enough to hold a chicken comfortably, with a hinged top and a slatted bottom. At night-fall throw open your poultry-house slide and set the larger box endwise against the opening, with the holed side uppermost. There will thus be a free ingress, through the box, to the roost, suiting skunky admirably. Next confine a chicken in box No. 2, and set it, contents and all, over the square or round hole in the larger box—with the slatted side down. Now set your trap in the larger box, directly under the smaller one, covering the flap carefully with light tufts of straw or grass, and—you may retire for the night. By morning the effluvia of the nights' carnage will have considerably abated if the captured animal has died in the interval. If not, and it is still alive, shoot it, standing at least fifty or a hundred yards to windward. Then, after the stench has subsided, release the body from the trap, observing that no portion of it touches your person or clothes; raise it gracefully on the end of a pitchfork or ten-foot pole, and bury it at once, out of sight, smell, and memory.

Deodorizers.

Deodorizers and disinfectants may act in one of three several ways: 1. They may overpower the odor and thus render it imperceptible. 2. They may absorb it, and thus remove it from the atmosphere; or, 3. They may decompose it, and thus render it innocuous. It is evident that, although very useful in some cases, the first class cannot be relied upon where the contaminating odors or vapors are truly poisonous. To hide the offensive odor of emanations from drains and cesspools by means of more powerful odors, is not to rob these emanations of their deadly character, although this is a mistake that is very frequently made. We must, therefore, be very careful that the odors which we wish to disguise or overpower are in reality harmless; that they are merely disagreeable and not poisonous. Of these, however, there are a large number, a good example being the odor of boiled cabbage—one of the most disagreeable, penetrating and persistent smells that we know of. Disagreeable as it is, it is certainly not injurious, and anything that will conceal or disguise it, will serve the purpose quite as well as a disinfectant that exerts a more powerful chemical action. Substances used for merely concealing bad smells are strictly deodorizers and must not be confounded with disinfectants; the latter are frequently deodorizers also; thus there are few more powerful deodorizers than chlorine, which is also a disinfectant; but roasted coffee, which is a good deodorizer, is not at all, or, at least, only in a very slight degree, a disinfectant.

Prominent amongst the simple deodorizers are the smoke of burnt rags and paper, and the vapor of roasted coffee. By means of these the ordinary effluvia of the sick room, and those accidental odors that occasionally find access to the rooms of even the best houses, may be neutralized and rendered inoffensive. And it is even probable that they exert a slight disinfecting power, due to the pyro-acetic acid, and possibly also creosote and carbolic acid, which are the products of all smothered combustions.

In producing smoke from burnt rags or paper, we should avoid bright flames, and allow the material to burn with a slow or smothered combustion. A few rags laid on a hot shovel and set on fire, will continue to burn even after the flame has been blown out, and they will then give off a very strong vapor, which will overpower almost any of the smells with which we are ordinarily annoyed. When paper is used, it is best to select the brownest and coarsest. There is, however, a variety of coarse brown paper which consists largely of fine woollen dust or shoddy, and this we must carefully avoid. The best method of applying coffee as a deodorizer, is to place a small quantity of the berries on some hot coals, placed on a common shovel. The shovel with its contents is then carried through the rooms in which it is needed, and the pleasant aroma of coffee will in general displace any disagreeable smell that may be present.—*Technologist*.

Slaughtering at the New York Abattoirs.

At the abattoirs or slaughter-houses of New York, most of which are now conducted with the utmost degree of cleanliness and order, very little of an animal is lost after it has been slaughtered; every part of its substance is used for some purpose, even to the blood. The mode in which bullocks are handled after they are penned up for slaughter is thus described by the *N. Y. Bulletin*:—"The way they kill a steer is this:—A man gets in behind the steers and throws a rope around the hind leg of one. Then he signals two men, who pull on a windlass till the head of the steer is above the ground. Then the throat is cut, and the blood flows into pans. A steer generally gives three panfuls of blood. Then the lot of savages—the skinner, legger, and entrail drawer—pounce upon the carcass as a very hungry man assails a beefsteak, and in a very short time it is a carcass of dressed beef, ready for market. The butchers pay rental for pens for storage and slaughter, and bring their stock over the Pennsylvania Railroad.

"The Abattoir Company make everything pay profit. They salt the hides down long enough to set the hair. Then they shake out the salt and ship them to Europe and all parts of the United States. The unsaleable portions of the hides are made into glue, the horns into buttons, combs, etc., and the inside of them into bone lime; the bones into various articles of commerce. The fat is rendered, and the offal made into a fertilizer at The Meadows—a station about four miles out on the road from Jersey City, where the hog abattoir and the repair shops are situated.

"The blood is poured from the pans into iron tanks and run under a chute pipe to cook. It goes up an elevator and down the chute, then to a dryer, and by various systems of manipulation finally reaches the stage where it is reduced 60 per cent. and contains 17 per cent. ammonia.

It is almost an impalpable powder, and is worth \$50 per ton. This place turns out a ton and a-half of it per day. "The Abattoir Company do not allow anything—hides, pieces, bones, horns, blood or offal of any kind—to be thrown away, because there is money in every particle of the beef. They have the offal and bones carted away to their destinations—the bone factory and fertilizing establishment—immediately upon the accumulation of a carload, and the place is cleaned up every day.

"The theory that filth congregates about an abattoir, or that the river is filled up by the offal thrown overboard, is dispelled by the facts. The Board of Health of Jersey City are convinced that there is nothing about a well-conducted abattoir that is deleterious to the public health."

Training Collie Dogs.

A good sheep dog, even though its beauty generally deteriorates in the inverse ratio of its usefulness, is one of the most serviceable animals the sheep farmer can possibly have on his place. Well trained dogs of the collie breed are very rare on this side the ocean. We question if ten such can be found in Ontario. Our own experience points to but two, and in both cases we have known their owners to refuse oft-repeated offers of a hundred dollars apiece for them. Well might they do so too, for these animals save more to them every year, in the matter of herding and droving, than the profits of their entire flocks could otherwise meet. There are three different breeds of collies trained in Europe, the Scotch, English, and German, but the first is, by universal consent, accounted the best, both for its aptitude to learn, and its general intelligence. Many specimens of the Scotch collie are to be met with on Canadian farms, and for the benefit of those possessing them, who may desire to draw out and utilize their good qualities, we subjoin the following directions by Dr. N. H. Paaren, which are condensed from the *Live Stock Journal*. The writer says:—

For herding, driving, or guarding large flocks of sheep, a shepherd's dog is almost indispensable; and a single shepherd and his dog will accomplish more in gathering a large flock of sheep than fifty tolerably lazy shepherds could do without dogs. Every collie pup has a natural instinct for work amongst sheep, nevertheless they should be trained with an old dog. Their ardent temperament requires subduing, and there is no more effectual way of doing this than keeping them in company with an experienced dog. A long string attached to the pup's neck, in the hands of the shepherd, is often necessary, to make it become acquainted with the language of the various evolutions connected with his work. With this contrivance it may learn to "Hold away out by!" "Come in!" "Come in behind!" "Lie down!" "Be quiet!" "Speak to 'em!" "Get over the fence!" It will, if due patience and constancy are exercised, learn all these terms, and others, in a short time. The bitch is generally more acute in learning than the dog, and is not so apt to be lazy, though the dog will bear the greater fatigue.

The best time to begin the training of a pup is about the sixth or eighth month of its age. When a year old or more, before his training is begun, he will never amount to much. Before taking the young dog into the field, he should be perfectly familiar with you. He should know his name, and mind you when called upon. If he is not attentive, or does not come immediately, pinch his ears, but never jerk him by them; practice this until he will come at your bidding, even if he knows he is going to get a flogging. Never flog the dog unless he knows why he gets flogged. All orders should be accompanied by a motion with the hand in the direction you wish him to go. If he does not come when called upon, or refuses to go in the direction you send him, continue to give the same order, and make the same motion, until you can get up to him, and then larrup him soundly.

The rudiments of training of a shepherd's dog consist in bringing him to promenade back and forth from one side of the flock to the other at the motion of your hand. The next step will be to have him pass up the side of the flock, yourself and the dog supposed to be at the rear of the flock. Your dog is supposed to be conversant with the meaning of this motion of your hand and arm; so, when you point forward with your left hand and arm, you must continue calling out the words, "Away up!" until he gets hold of your meaning, and goes up along the left of the flock. Idleness is the progenitor of laziness and vice, wherefore, in order to prevent your pup from acquiring either of these habits, keep him constantly occupied, by putting in almost your entire time in making him do something, provided, of course, that you do not worry the flock or tax your dog too much. By degrees the dog will be urged up towards the head of the flock, and partly around. While there, change your position at the rear of the flock, towards the right—supposing you were at the left, and your dog had been sent up along the left side—and call him down towards you along the right side, by making a motion towards you, and crying "Come in!" A sweep of the arm from the side you wish him to start to the other, is

the proper motion, when you want him to go ahead and around them, and the motion should be accompanied with the cry "Around them!" It requires some time and patience to bring the dog up and ahead of the flock. It will come by degrees; and if your pup is possessed of some good, hard dog sense, it will not take him long to know that "Up! Away up!" means that he shall go for the head of the flock. Always call his name in giving an order, and always make the motion with your hand.

If you are driving a flock along a fenced road, or in a field along a fence, and you want your dog to go ahead of them, get over the fence yourself, and by motioning and calling the dog "Over and up!" he will mount over the fence, when he fathoms your meaning, and go ahead inside the fence, or outside, as directed. If you want him to stay at a certain place, away from you, teach him to "Stop there!" or "Lie down!" If you wish to go ahead of the flock yourself, and have the dog remain behind, go ahead, along one side; and if the dog wants to follow you, drive him back by threatening motions, and the words "Get thee behind!" and when he has got back to place keep an eye on him, and sing out occasionally "Drive them up!" and "Speak to them!" By practising this a short time on a fenced road, the dog can be taught to bring the flock up after you, in whatever direction, even on a wide field.

It is not desirable to have the dog barking all the time. You must teach him to "Keep quiet!" and to "Speak to them!" In order to make him speak to them whenever you wish him to, make a big fuss yourself, and so get him excited, when, by singing out "Speak to them!" you can set him a-barking. This is especially desirable when he is bringing up the rear, when crossing a railroad, driving them over a stream, or into a yard. It will also be necessary to teach the dog where to "nibble" (not bite) the sheep. Some shepherd dogs acquire the habit of taking hold of the legs of the sheep, whereby the skin is apt to break, if the wool is not of some length. If the dog is trained to catch any sheep that is pointed out to him, he should be taught to take hold at the side of the neck near the shoulder, not at the ear, and least of all at the throat.

In Texas they have a way of training dogs with sheep. A pup is taken from its mother before its eyes are opened, and put with a ewe to suckle. After a few times the ewe becomes reconciled to the pup, which follows her like a lamb, grows up among, and remains with the flock; and no wolf, man, or strange dog can come near the flock of sheep; and the flock will follow the dog to the food regularly at half past seven o'clock P. M., if you habitually feed him at that time.

Should Pike be Protected?

EDITOR CANADA FARMER. At the present time, when so much has been done by Government and is being done by local and county associations for the preservation of our game and fish, it may not be out of place to inquire if some of our edible and sport fish are efficiently or at all protected.

We single out for present remarks our Canadian Pike (*Esox lucius*). This fish which is little, if in any respects, different from the English "jack," or Scottish "ged," is, or rather was, very common in all parts of Canada where lakes, ponds, or sluggish streams are found. It bites freely, fights strongly, and is indeed the best fish that can be got hold of on a line in our Canadian waters, whether for sport or for "replenishing the barrel." Yet the pike is generally accursed and persecuted. He is generally accredited with the character and title of a "fresh water shark," a "tyrant of the stream," and such like vocables. From this bad reputation we wish to drag him. In the first place the pike is no more omnivorous, or fish-killing, than any other of our Canadian fresh water denizens. His haunts are in general sluggish, weed grown pools, in the river, and ponds or lakes where shelter is to be found among weeds or fallen logs. His food is frogs in particular, and, failing these, chubs, shiners, and other such (to the angler) worthless prey are eagerly seized upon. As for the charge of the pike devouring trout, we believe it to be altogether absurd. Trout do not inhabit the stagnant streams or dormant ponds where pikes mostly congregate. Either the speckled trout, the pickerel, or the black bass are more than a match at any time of the year, by their swiftness, for the pike, whenever he comes in their way.

There is no protection afforded in our legislation to the pike—he being evidently deemed, by such neglect, as a demon, or an animal of "another color" and not to be meddled with. Against this neglect, both by parliament and people, we strongly protest. Our pike is one of our finest fresh water fish. He is a noble and tough fellow to run at the end of a line, and, take him in August or October, where will we find a better flavored or firmer fish upon the table? Yet he is slaughtered at all times and at unseasonable seasons. In this part of Ontario (Oxford) the pike is, and has been slain by the thousand, every spring. As soon as the ice breaks up, and the fish are able to ascend from their winter lairs in the lakes—such as Pine Pond—they are attacked by every boy that can wield a fish-spear. They are speared, they are shot, they are "clucked" out, and even captured by hand in the narrow and shallow creeks to which their breeding instincts

have led them. It is a remarkable fact, in many parts of Canada, that men who do not profess to be sportsmen in any sense of the term, will turn out thus in the months of March and April, with shot guns and spears, to immolate the spawning pike, utterly unfit as they are for food, and perhaps that is all the amount of "sport" they do for the year.

Would it not be well if our pike were put on the "game" list of Canadian fishes? Certainly the destruction that has taken place of late years in Oxford and Brant—especially in the once famed "Horner's Creek" an inlet and outlet of Pine Pond—deserves the attention of the local inspector. A great effort had been made last year by the Government and their officers to secure open passage for fish over all the dams. These have been nearly all secured by fish-slides in the area of the Grand River, and, with the open winter, it is believed there will be a vast increase of pickerel, bass, &c., in the streams. Without trespassing more upon your space, and hoping that our pike will not be left out as little less than "vermin" any longer, I am, &c.,

Paris, Ont.

PISCATOR.

American Beef in England.

An invention has now been tested to an extent which leaves no doubt that fresh meat can be, as it has been, imported from Canada and the United States, and be sold and eaten here without the consumer knowing he has not been enjoying a cut from a prime "Scot." Refrigeration, though the meat is not actually frozen, best describes the process, which has the merit of extreme simplicity and of leaving the meat absolutely unaltered, both in flavour and appearance. The cattle intended for shipment are killed a day or two before the vessel starts, great care being taken to extract all the blood. After the carcase is cut up, the quarters are sewn up in canvas and conveyed to a compartment in the hold of the only line of vessels (Guion's steamers) as yet fitted up for the purpose. Here the quarters of meat are slung so as to swing clear and allow of a free passage of air all round them. Tanks round the compartment are filled with ice sufficient to keep the temperature of the air down to 37° during the passage, and a constant motion and circulation is maintained by the action of a large fan worked by steam. The effect of keeping meat in this dry, cold atmosphere for 10 or 12 days is to so harden and solidify the surface, that at the end of the passage it is more marketable in appearance than when first killed. Some 40 ton, sent as a first experiment, were forwarded by special train direct from Liverpool to the Central Meat Market at Smithfield, and found a ready sale at top prices. All the meat has reached market in splendid condition, cool, dry, firm, and free from the slightest taint, and it has been hard to convince experienced butchers and salesmen who saw it for the first time, what they were inspecting. The inventors of this very promising process are Messrs. Eastman & Martin, of New York, Mr. J. A. Lippincott, also of New York, having successfully applied the principle so far as it has gone, Mr. J. D. Link, of Liverpool, and of the Central Meat Market, being the agent here. The capacity of the compartments so fitted in the Guion steamer is about 200 ton. The consignments now being sent every week amount to 50 ton, and the supply is now in process of rapid development to the maximum which the present arrangements will allow, of 200 ton weekly.—*London Standard*.

Fancy Farming.

There is a great deal of truth in the following interesting article from the *Chicago Times*. Whilst comparatively slow to receive new truths, people are not always so backward in stigmatizing those who strive to inculcate them. But we should not forget that it is to the reverses and success, the wisdom and the follies of experimenters that the world is largely indebted to-day for its progress not only in agriculture, but in all the arts and sciences. The *Times* says: No class of men have been ridiculed so much, and none have done so much good, as those who are denominated fancy farmers. They have been, in all times and countries, the benefactors of the men who have treated them with derision. They have been to farmers what inventors have been to manufacturers. They have experimented for the good of the world, while others have simply worked for their own gain. They tested theories while others have raised crops for market. They have given a dignity and glory to the occupation of farming it never had before.

Fancy farmers have changed the wild boar into the Suffolk and Berkshire; the wild bull of Britain into the Short-horn, the mountain sheep, with its lean body and hair fleeces, into the Southdown and the Merino. They brought up the milk of cows from pints to gallons. They have lengthened the sirloin of the bullock, deepened the udder of the cow, enlarged the ham of the hog, given strength to the shoulder of the ox, rendered finer the wool of the sheep, added fleetness to the speed of the horse, and made beautiful every animal that is kept in the service

of man. They have improved and hastened the development of all domestic animals, till they hardly resemble their creatures from which they sprang.

Fancy farmers introduced irrigation and under-draining, grinding and cooking food for stock. They brought guano from Peru and nitrate of soda from Chili. They introduced and domesticated all the plants we have of foreign origin. They brought out the theory of rotation of crops as a natural means of keeping up and increasing the fertility of the soil. They first ground up gypsum and bones, and treated the latter with acid to make manures of peculiar value. They first analyzed soils as a means of determining what was wanted to increase their fertility. They introduced the most approved methods of raising and distributing water.

Fancy farmers or fancy horticulturists have given us all our varieties of fruits, vegetables and flowers. A fancy farmer in Vermont a few years ago originated the Early Rose potato, which added millions of dollars to the wealth of our country, and proved to be a most important accession in every part of the world where it was introduced. Another of these same fancy men originated the Wilson strawberry, and another the Concord grape. It was a fancy farmer that brought the Osage orange from Texas to the Northern States.

Among the men in this country who were classed as fancy farmers at an early day, were Washington, Jefferson, Franklin and Livingston. The first introduced mules; the second, the cultivation of improved rice; the third, the use of land plaster, and the fourth, the raising of lucerne. More than any men of their time did they add to the wealth of the country. After them came another race of fancy farmers, who introduced Arabian horses, Spanish sheep, and the improved breeds of English cattle and swine. These fancy farmers added immensely to the wealth of the practical farmers of the country.

What we want, to develop the agriculture and horticulture of the country to their fullest extent, is a large number of fancy farmers, men who work for pleasure rather than for private gain. These are the men who will perform experiments and give the world the benefit of them. These are the men who will carry on investigations for the sake of investigating.

These are the men who will bring in new grains, new fruits, new vegetables, and new varieties of animals. These are the men who will devote their time and money to the improvement of old varieties and the creation of new ones. The country is sadly in need of more fancy farmers.

The Art of Skeletonising Leaves.

The subject having excited a little interest among some horticulturists lately, owing to the exhibition of some beautifully executed examples at some of the large provincial exhibitions held in the Northern and Midland counties of England, I took the liberty of appealing to a lady friend, who has been very successful as a skeletoniser of foliage, requesting her to favor me with the *modus operandi* by which she produces her specimens with such perfect completeness.

My informant states at the outset that the art of skeletonising leaves and flowers would be found much less difficult of accomplishment were the nature and character of the various plants thoroughly studied at first. This is, no doubt, a very important matter. For instance, it would be but a poor direction to the learner to say: "Gather the leaves on a certain day," unless proper attention be also paid to the leaves chosen. They must have reached a certain degree of maturity, neither too old nor too young, and as all leaves do not reach this point at the same time, it is obvious that care must be taken that each kind must be gathered when fit for use. The leaves of the magnolia, for instance, may be gathered when the plant is in bloom, varying in time from June till August. They will require from a month to six weeks' time to be well immersed, and so be easy to dissect, as the fiber is so strong. The leaves of the ivy rank among the most difficult, and, because of the peculiar beauty of the fiber, will amply repay the trouble involved in the preparation. These may be immersed from the beginning of May to October, but should be leaves of the previous year's growth. All leaves will not answer for dissecting, but those that have been most successfully operated on are from the magnolia, ivy, pear, rose, holly, orange, poplar, willow, elm, lime, service tree, Spanish and horse chestnuts, and the oak. The leaves of the last named should not, however, be put into the same vessel with the others, as it affects them in an undesirable manner. Seed vessels may also be dissected in an admirable manner; such are those of the stramonium, winter cherry, poppy, &c.

To procure good specimens, put the leaves into a deep jar, and cover them with soft water, which must not be changed; the jar is then to be put into a cool place. When, upon examination, the leaves are found to be quite soft, they must be carefully brushed in a weak solution of chloride of lime for a short time, to whiten the fiber, and afterwards washed well in two or three waters, and

dried carefully between sheets of blotting paper or linen, after which they are ready for mounting. To make stems for this purpose, thread stiffened with gum, is most useful, and it has a natural appearance. The leaves may be formed into bouquets or wreaths, according to the taste of the operator, and should be placed under glass shades to preserve them from harm.

I have seen groups of leaves so prepared that formed most acceptable table ornaments in sitting and drawing-rooms; and it suggests a pleasant employment for the fair sex, with which to fill up moments of leisure. It is evident that much nice discrimination in the selection of the right leaves is required, and a light and careful manipulation is also essential; and in the case of failure from a first attempt, no small amount of patience is needed to carry the operator through to ultimate success.—R. D., in *Land and Water*.

Bara Avis.

EDITOR CANADA FARMER:—Two remarkably pretty birds that had just been shot in the immediate vicinity of this town, were brought to me the other day for identification.

They proved to be male specimens of the "Shore Lark," *Alauda alpestris*. They are of rare occurrence, at all events in this neighborhood, for during my residence of more than twenty years in the County of Peterboro', I have never before seen them either alive or dead.

Since the dead specimens were brought to my house I have seen the living birds.

They are birds of passage, and visit this continent, I believe, only during the winter months, their summer habitat being north, even of our hyperborean region.

They are about seven inches in length. Their prevailing color is reddish brown. The fore part of the head, the throat, and the sides of the neck, are bright yellow, bounded by black. The belly is nearly white. There are on either side the head feathery horns which can be erected or depressed at pleasure. The hind claw is long, similar to that of the English Sky Lark; and, like that charming songster, the bird in question pours forth its simpler notes as it mounts toward "Heaven's gate."

These birds have appeared in company with a flock of Snow Buntings.

VINCENT CLEMENTI, B.A.

Peterboro', Feb. 23, 1876.

Narrow Boards for Flooring.

A great many persons, even experienced builders, says the *Practical Farmer*, are not able to assign a philosophical reason why narrow boards are better for a floor than wide ones. If lumber were so thoroughly seasoned that the board would not shrink on one side, nor swell on the other, wide boards would be more desirable for a floor of any sort, than narrow ones, for the reason that a joiner will fit and lay a board one foot wide about as quickly as he can fit and lay a board four inches wide. More than this, when the edges of the floor boards are matched, there will be more waste if the pieces are narrow than if they are wide.

When floor boards are a foot in width, the upper side is liable to contract more than the under side. This is particularly the case when the floor is wet for a short time and afterwards is allowed to become dry. When the under side of a floor is exposed to the dampness of a cellar, or to the moisture of the ground beneath it, wide boards will warp and render the surface of the floor more or less corrugated. But, if the boards are narrow, although the under side may swell as much as if they were wide, the surface of the floor will be much more even and true. Hence, wainscoting should be narrow. When certain pieces of furniture are being made of a wide board or broad plank, it will be better to dress out pieces only a few inches wide, heat them thoroughly in a stove-room, then join the edges and glue them together.

In many instances, one has numerous pieces of black walnut, butternut, or other valuable timber, which might be glued together and thus made a more desirable wide board than one entire piece. The beds of billiard tables are all dressed out in pieces of plank only three or four inches wide and glued together firmly. The correct way to make a neat and true drawing board or table, is to dress out narrow pieces of plank, heat them for ten days in a stove-room, then join the edges true and glue them together. When the edges of two boards are united with hot glue and pressed tightly together for a few hours, the timber will yield on either side of the joint before the glue will allow the pieces to separate. Glue is stronger than most kinds of timber.

Farm Ponds.

A correspondent of *Colman's Rural World* says:—This is a subject of importance to farmers living where there is a scarcity of water for stock. I speak from an experience of many years on this subject, and if my knowledge gained by my experience is worth anything, all interested are welcome to it.

I believe in ponds for stock and for fish. For many years I have had one, and during all these past dry seasons, while many have had to drive their stock many miles during the dry spell, I have had plenty of water for my stock of all kinds. The only question or drawback to these ponds is, that as some people build them, they soon become shallow, and during the hot season the water becomes stagnant. This need not be. The pond should be deep. I have two ponds—one for stock and fish, and one for fish and ice for family use. The stock should not be allowed the full freedom of the ponds. Let the fence be built out into the pond so that all the stock can conveniently use it and not rile it up.

I built my first pond with plough and scraper, one man and span of horses, throwing a dam across a small ravine convenient for the purpose, taking the dirt for the dam from the place intended for the pond. Thus, with a week's work, we had a grand, good pond, which is yet in use for stock and fish. My second pond I worked at, at intervals, as was convenient, for two years, taking the dirt from the bed of the pond, but leaving a place at the deepest point for the water to run off so I would not be troubled with it while building my dam, and filling it up only after I had built the rest of the dam. Thus I was enabled to make my pond deep, and the dam more perfect than I would if obliged to hurry lest the rains come and fill the pond before I had dug it as deep as I wished.

This pond gives ice for the family, and also fish. It is ten feet deep. Both ponds are stocked with fish obtained from the creeks and the Mississippi river. To aid in keeping the water pure, I have planted in these ponds the real eastern white water lily. These ponds, in the absence of living springs and streams, give us much profit and pleasure. A boat is to be added to one of them in time, when, friend *Rural*, consider you have a standing invitation to call up of a summer's day, take a stroll through the orchards of the Woodburn Fruit Farm, a ride on our upper lake, and, as the shades of evening approach, a plate of ice cream as we return to the old house, said cream being made by using home-made ice from the said upper lake; and when weary nature shall call for rest, you shall take the softest pillow we have, and as the birds awake you by their songs in the morning, after partaking of a country-made cup of coffee, and fresh fish of many kinds from these ponds, you may, if then you tire of the scenery, the ponds and the fish, and ice from the same, place yourself in a plain but convenient carriage, behind a substantial span of horses, and soon find yourself at Bunker Hill, in time for train going west, arriving in St. Louis all right, to give us another timely article on the utility of stock ponds."

The Agricultural College.

The *Hamilton Times*, in an article on the Agricultural College and Model Farm, after showing the necessity that existed for the establishment of such an institution in Ontario, and the beneficial and systematic method in which the various departments are at present conducted, concludes thus:—That the College is doing a good work, none can deny, to theoretical teaching is added actual experiment and proof by results. The farm contains 550 acres of land, which may be characterized as gravelly loam, varying in richness, according to variation of the subsoil, through all the forms of such loam including to gravel, sand marl and clay. This variety is of the greatest importance—in short, the entire premises are capable of becoming a workshop or laboratory for the experimenting student of enquiring mind. During the winter the pupils study hard, but in the summer they are steadily employed on the farm. It is required that every one of them become practically acquainted with the various operations going on. They are taught all that is valuable about raising improved horses, cattle, and sheep; they study horticultural experiment in propagating vegetables and improving them; they learn rustic ornamentation, the art of building fences, gates, outhouses, &c., of every kind, they are taught how to destroy insects which attack trees, &c.; how to gather grain and fruits, how to make drains and roads, how to operate in the markets, how to lay cut walks, drives and property, how to plant, and how to use all sorts of implements. Though drought and insects, and a sharp June frost, last year greatly injured the crops, 2,200 bushels of barley were taken from 56 acres

of land; 1,200 of peas from 41; 1,600 of oats from 42; 300 of wheat from 19; 150 of potatoes from 4; 200 carrots from 1½; 400 of mangolds from 1½, and 12,000 bushels of turnips from 23 acres. Large quantities of fruits and vegetables were cropped also. Nearly all the pupils passed at the final examinations, and a number of prizes were handsomely won. In short, the College was successful in every department, and now that it has settled down to hard work, the highest hopes are entertained of it in the future, making it more popular than ever before with the farmers.

Curious Statistics about Insects.

In 1782, says the *London Times*, the caterpillars of the brown tail moth were so numerous as to defoliate the trees of a very large part of the South of England. The alarm was so great that public prayers were offered in the churches that the calamity might be stayed. The poor were paid one shilling per bushel for collecting caterpillars' webs to be burned under the inspection of the overseer of the parish: and four score bushels were collected daily in some parishes. But on the other hand, the benefits derived from the labor of some insects should not be overlooked; some species feed only on noxious weeds, and others prey on still more noxious insects. One of the greatest friends of the agriculturist is the family of ichneumon flies, which lay their eggs in the bodies of living caterpillars, in which they are hatched, thus destroying them; although the caterpillar, after being "ichneumonized," has still a voracious appetite. The caterpillars which feed on the cabbage eat twice their weight in a day; the larvae of some of the flesh flies eat a much larger proportion than this. The productive powers of insects vary very much. Some lay only two eggs; others, such as the white ant, 40,000,000, laying them at the rate of sixty a minute. The queen of the beehive is capable of laying 50,000 in a season; the female wasp, 30,000. The majority of insects, however, lay but one hundred; in general, the larger the insect, the fewer eggs it lays. Most insects have two generations in a year; some have twenty; others take seven years from the time the egg is laid until their death in a perfect state. But probably not above five per cent. of the eggs laid become perfect insects. Our insectivorous birds are diligent in destroying the larvae of insects, but they will not do all that is required; hard labor is also needed.

Rustic Hanging Baskets.

Of all floral adornments about the dwelling house, none are more pleasing, attractive, or becoming more popular than the hanging basket. It may be made to assume such a variety of shapes in itself; is so picturesque in its many-colored foliage, in the windows, under the verandahs, inside, outside, in fact everywhere around the house; and it presents withal such a wide field for feminine taste and speculation, that we cannot, in justice to its many merits, devote to it less than a special chapter. The hanging basket is peculiarly a home article, home conceived and home manufactured. It may, of course, be purchased ready-made at the seed store, but in that case the elaboration and uniformity of its workmanship detract seriously from its claims to rusticity, just as its price tends on the other hand not in the least to enhance whatever other charms it may possess. The prettiest one we ever saw was made of old bits of twigs, in the "log cabin" style. It may also be made of wire, of old knots, ends of small trees, grapevines, or branches, in fact, of almost anything—the more uncouth and rustic the better. Fasten the various parts at the proper places with ordinary stove-pipe wire; attach your hangers of bright, strong cords or slender brass chains, and the thing is complete. The next move is to collect a quantity of nice green moss, with which the basket is to be lined along the bottom and sides, both to enhance its beauty by filling its orifices, and to prevent the soil with which it is afterwards filled, from falling through. This soil should be a nice, mellow, dark loam, and a slight admixture of manure would not hurt it in the least. Seeds and plants may now be disposed all over it, above, below, and around the sides, just as fancy pictures it. For basket plants, we cannot do better than quote from a lady's letter to the *N. Y. Herald*. She says:—The graceful smilax is first on the list. Its dainty glossy leaves will add a charm to everything it touches. Next, the English ivy has the richest foliage. If you can wait for its tardy growth you will have an elegant vine. But we like the German ivy best. This ivy will do such wonderful things in the way of adorning windows and pictures, and do them so quickly. The Kenilworth ivy is the best trailing plant we have ever grown, and is unsurpassed for a centre basket.

Moneyworth is also a good trailer, but is prettiest among other plants. All these are of easy culture. If given much water, morning and evening, they will delight you with their constant growth. If these are too many in a home where work must lead and pleasure follow, two or three varieties in a single basket or a little hanging garden will become a thing of beauty, and give more pleasure than many a costly ornament.

Any of these vines are exceedingly desirable for the lawn, for trellises or over rock work, or in rustic vases or lawn baskets. These may be made of branches of trees interwoven with grape vines, bound with moss, then filled with earth, and they are exceedingly appropriate for a country garden where all these materials are just at hand. In these may be grown several varieties. The *dracena* is very showy in the centre of large vases or lawn baskets. Around this set verbenas, with here and there a bright pansy; and about the edge set trailing plants. If you wish vines for baskets with handles, naturally, is excellent. One such basket will do more for its possessor, if well cared for, than a whole garden of neglected flowers. These are as easily grown as the common kind. A very attractive basket may also be made of wire, lined with moss, filled with ferns, wild plantain and *Lycopodium* from the forest. These will grow all summer with a little care, in any shady corner of your rooms, and send up long, graceful, drooping fronds much larger than those first planted. In such a basket place a bunch of pansies or forget-me-nots and you will have one of the loveliest ornaments imaginable.

An Open-air Aviary.

I have surprised many of my friends, says a writer to the *English Live Stock Journal*, with the number of tame birds I have flying about my garden here in Twickenham. Many say, "Wherever did you get such pretty birds from? and how did you tame them?" Firstly, then, I must tell you how I win them from their usual haunts—trees. I have a long piece of wire fastened to the lattice, close to my dining-room window, and from thence carried to a neighboring tree: from this wire I suspend a hooked stick, with two or three pins sticking out at different parts, on which I fasten nuts. At first, the stick was hung close to the tree, and then, by degrees, moved nearer the window, till at last it almost hangs in the room. The visitors to this stick are the great Ox-eyed Tit, the Cob, and our lively little friend the Blue or Tomtit; and it is rare fun to see how they will fight for a nibble of the sweet kernel; poor little Tom finds his master in the Ox-eye, but nevertheless struggles bravely for his share. These little birds are so tame now, and look out every morning for their breakfast, that I may say they come at my call, and take not the slightest notice of my near presence.

I have a robin that feeds out of my mouth, and will follow me all round the garden. I tamed him by occasionally throwing him that greatest of all delicacies to Master Bob—a few meal-worms—and now he never refuses one from any of my friends who are not too squeamish to put one between their lips. Then, again, I have the Nuthatch, and that is the great attraction, I suppose, because so few people know there is such a bird. They come down on to a little rustic table, and crack *Baccharis* under our very noses; it took me some time to get them so close to the house, but eventually I succeeded.

Of course, Blackbirds, Thrushes, Sparrows, Chaffinches, &c. abound where they are regularly fed; and I never mind losing a little fruit in the summer, when I think of the great amusement the depredaters have given us during the winter months.

I can safely say, with a very little trouble, any one living in the suburbs of London would soon find out a fund of amusement for his family and friends by carrying out the above instructions.

WHILE CANADIAN FARMERS are mentally digesting plans for exterminating the Colorado beetle on its next appearance; and their confreres of the Northern, Western and Middle States are supplementing these contrivances by others, to meet the incursions of the grasshopper; Nevada now comes to the front with its grievance in the shape of a rabbit plague, which is said to be sweeping over that and the adjoining territories, after the manner of the Egyptian frogs of old. Last summer the pests consumed, in one district alone, over sixty acres of barley, besides large quantities of potatoes and other vegetables; and similar ravages are reported from several of the regions surrounding. The remedy adopted is both energetic and effective. Grand hunting expeditions are formed, whole neighborhoods sometimes joining in the pursuit, and the animals are shot down as they appear. Their numbers may be imagined from the fact that early in February, eight hundred and fifty-six were shot inside of four days, within an area of but a few miles, and with only eight shot guns. Advices from another ranch at Grass Valley also report over three thousand to have been killed since last July. Our neighbors may justly boast that they can now beat creation in this respect as well as in the matters of Boston jubilees and Chicago fires.

Humoring Animal Whims.

A correspondent to the *Agricultural Gazette* offers the following sensible observations:—Most people, at some period or other of their lives, have read Miss Edgeworth's pretty little story with this title; yet the principle which underlies it is still far from being commonly recognised. A man has a yard of bullocks, or a sty full of pigs. He has his orders; if above the average, he acts on these; if of a higher order still, he notices and sees that, good as a rule may be as a general rule, there are frequently, among numbers, exceptional cases which require the rule to be modified for them. With live stock the difference between profit and loss lies as often as not in the having a supervisor who knows when to enforce, or when to suspend a rule. In a yard of bullocks there is often one which, for some undiscoverable cause is obnoxious to the rest. These persecute it; and cause it to lose instead of gaining day by day. Out with it! if quick preparation for the butcher is your object. There is no help for it; one cannot enforce toleration upon quadrupeds; their masters have not yet acquired the lesson. The same beast, boxed apart, will thrive at once—become a weekly increase and not a weekly pull-back. Or some one or other of the cattle will not eat his cake, or his roots; it will probably be found his teeth are out of order; and that cake broken finer, or roots cut smaller, are needed; but careless feeders only curse the stubbornness of the brute; go on as usual, and leave it to take its chance. This generally means wasting, if not death. Or some difficulty of digestion makes one bullock ill to please; and the feeder, like Mrs. Gamp with her patients, won't see that it is her business "to be particular to a feature," and continues treating all alike, till serious disease has become established. With pigs such irregularities are frequent. One requires his food mixed thin, and will then drink it down freely, and thrive. Another eats best when the food is in lumps; and then fills itself quickly and lies down to fatten. A brainless feeder treats both the same; and half the profit is lost, for lack of observation. A man, with eyes, parts the pair and feeds each to his taste. It can never be too frequently repeated that the eye of the owner is needed, not merely daily, but several times a day, if grazing is to pay. And respect for individual peculiarities—hard enough to get recognised among men, for men—is absolutely required if a lot of animals are to yield the maximum of profit, or the minimum of loss. As fools are the most intolerant towards folly, so brutish men are most opposed to humouring the whims of brutes. Such whims will generally pay for humouring.

Poor Rest in Feather Beds.

If the labouring man's rest is not in all cases as sweet as it ought to be, very probably the fault may be his own, or mayhap that of his helpmeet who, in her commendable zeal to enhance the home attractions by substantial comforts, chooses these latter sometimes "not wisely but too well." There was a legend prevalent amongst the early settlers of Eastern Canada to the effect that a white man and an Indian once ran a race, of twenty-four hours duration, on skates. The goal having been reached, each betook himself to rest, the white man on a comfortable feather bed, the Indian on a skin spread out upon the hard floor. Next morning the latter arose refreshed, but the other was dead. This may or may not be true; it is not at all improbable; but on the contrary, quite consistent with sanitary rules. Feather beds, with all their plastic qualities and venerable associations, should be avoided by those engaged in active bodily exercise during the day. There is no rest for such in them at any time, nor indeed for any one whatever in the warm summer time. On this point a correspondent to the *Technologist* very shrewdly observes:—The cackling of the goose is said to have saved Rome. The feathers of the same bird are dealing death to America. We are reminded of this as the summer approaches, and the hospitality of rural friends occasionally introduces us to the "feather bed," which has come down an heirloom in the family for five generations. It is a capacious bag, holding some thirty or forty pounds of good, honest goose feathers, plucked a hundred years ago, and held in high esteem by succeeding generations, until it has come into the possession of the present incumbent of the old homestead. Underneath this feather bed is the straw bed, filled annually with clean, sweet oat straw. This relieves the pressure upon the bed cords, which are annually tightened at the spring house-cleaning with the old-fashioned wrench and pin until the tense cord makes music to the stroke of the hand. This feather bed was a tolerable institution in the days of log houses, with the free ventilation of a big fireplace and rifts in the roof through which the wind whistled and the snow drifted in every winter storm. But now, with tight houses, and stoves that heat everything from cellar to garret, the case is altered. No amount of airing and sunlight will permanently redeem the bed from the odor of old feathers, which is anything but agreeable, and the more atrocious effete animal matter that has escaped from the sleepers that have sought repose here for generations past. Think now of John Giles coming in from his day's work in the

field, where he has been following the plough or driving the mower or reaper, his body all day long in a vapor bath, to repeat the process in the night, what lies as he stretches his weary limbs upon this unpurged perspirator. Here he tries to sleep, but wakes often from fitful dreams, and tosses as if a fever were raging in his veins. Is it any wonder that he rises from an unrefreshing sleep with the early dawn, that he grows lean and cadaverous, and becomes cross and dyspeptic? The poor wife who shares his couch, has possibly, in addition to his discomforts, the care of a nursing child. Is it any wonder that she comes to the morning more dead than alive? Is it any wonder that so large a per cent. of the inmates of our lunatic asylums come from our farms? The old proverb that "the rest of the laboring man is sweet," needs to be received with several grains of allowance. There is not much sweetness or refreshment on this pile of feathers in the sweltering summer nights. It is surprising to see how long it takes modern improvements to invade the agricultural districts, even with the help of railroads and newspapers. Hair mattresses and spring beds are unknown luxuries in many of these districts where the civilization is at least two hundred years old. "The age of home-spun," supposed by some of our brilliant writers to have departed fifty years ago, is still continued in almost unbroken force. Something cool and soft to sleep on and under, is still a desideratum in most farm-houses. The apology for feather beds and cotton-quilted comfortables is not poverty, but convenience of manufacture. The feathers are a home product, and a tea-drinking makes the quilts and comfortables. Yet John Giles owns his farm, is out of debt, has a good bank account, owns railroad stock, and could have mattresses, fine linen, and blankets if he understood their comfort and economy. Where are our advertisers of good beds and bedding?

"Only a Livery Rig."

"Twenty six miles, and only two hours and thirty three minutes out—a pretty fair run on the whole!" The speaker was a young man, of pleasing exterior, dressed in the neat but rugged habiliments suited to the demands of a sharp Canadian spring morning. His appearance generally; the "get up" of the animals he drove, and of the iron-cased trunks with which his vehicle was loaded, and which at every jolt threatened to burst their bands and disclose to the astonished gaze of the crows, squirrels, and other denizens of the surrounding forest "samples in the latest styles," etc.,—all bespoke him the Commercial Traveller.

"Only six miles to C—, why, will get there by dinner time" he continued, as, simultaneously with replacing his watch, he swung the villainous whalebone whip sharply round his head and uttering the remark which heads this article, brought its keen, switching point, once, twice, thrice, with almost cutting severity on the already welled flanks of the animals in front of him. For a moment or two the effect was apparent. The poor jaded brutes made a spasmodic forward movement, evidently, however, more with the intention of getting further from the source of pain than from any remaining ambition of a nature akin to that which actuated them at the first setting out. "Only a Livery Rig," and again the whip was brought into requisition, accompanied this time by several severe jerks of the reins which had the effect of very materially deepening the color of the foam which subsequently fell, or was shaken from, the clanking bits, and, like flakes of crimson snow, dotted the reeking withers of the willing but exhausted team. A few more such inflictions, the last few of which were responded to by an impatient twitch of the muscles or a weary swish of the tail, and the stable is reached; the poor "Livery Horse" gets his accustomed quota (one gallon) of oats; the thoughtless driver his usual supply of the good things of this life, and the journey is resumed.

The foregoing is no mere fancy sketch, but the result of everyday observation; and although for the purpose of illustration, we have individualized the Commercial Traveller, we by no means charge this class with being the only sinners in the matter. The indictment takes a very much wider range, and embraces in fact, delinquents from every rank of society. We have known ladies of the highest culture and respectability, thoughtlessly no doubt, err in this respect, and even ministers of the Gospel "they have been kenneled in" anything but "holy rapture," to apply the lash with an unction creditable, if not to their hearts, at least to their muscular development.

"A Livery Horse?" Yes, but a horse nevertheless, and for that matter, wonderful to relate, possessed of the same sensibilities, and as keenly susceptible of feelings of pleasure or pain, as the pampered pibald of "Her Royal Highness," or the prancing thoroughbred of "My Lord, Duke!" The fact is—to the shame of our boasted latter day civilization be it said—that there lives in our midst a certain class, or rather individuals from almost every class, who seem to regard the horse, and especially the "Livery Horse," as a sort of animated target, especially designed and bestowed by Providence for testing the efficacy of whiplashes, and the potency of starvation. The whip to such is neither more nor less than what a certain polished lever is supposed to be in the hands of a locomotive engineer—simply an appliance for "putting on steam;" whilst the stereotyped "gallon of oats" is, by a somewhat parallel

process of reasoning, compared to the fuel placed under the boiler, by the same functionary, for "steaming up" purposes. Indeed, with such a meety of mechanical perception has the latter parallel been drawn by some, that we have known them follow out the idea to its legitimate conclusion, and literally apply the fuel to the animal outside, aye, and set fire to it too, with all the pardonable self-complacency of beings who ever and anon and with such magnificent strides leave their contemporaries far in the rear.

We have no patience with the person who abuses a horse, and wherever it is our misfortune to be an unwilling witness of such abuse, we confess to a sort of savage inclination to join in the fracas and become demonstrative. Our candid opinion is, that in the vast majority of instances in which the whip is brought into requisition, the application is entirely misplaced. Were a few of our "livery horses" of to-day endowed with the faculty of speech like Balaam's Ass, they could no doubt a "tale unfold" of a nature anything else than flattering to our humanity. As there is little likelihood however of an appeal from such a source, we can only submit the subject to the better instincts of our own nature, hoping it may receive the attention it so deservedly merits. Poor "Livery Horse!"

Capturing Hawks and Owls.

Most hawks, especially such as prey upon fowls of any sort, usually light on the top of some bare pole, post, or dry tree. A farmer writes that he has succeeded in taking about twenty hen hawks in a steel trap, by setting the trap on the upper end of a square pole some twenty feet high, with the but end firmly planted in the ground. E. Gaylord, of Iowa, writes in relation to capturing owls:

When I suspect the owls are about to commence their mischief, I get a stick suitable for the place, and fasten a small steel trap flat on the top, and set it up some three or four feet above. If an owl comes anywhere near, he will be very sure to settle down in the trap with as calm and as graceful an air as an owl is capable of putting on. This is a trait in the owl quite peculiar to himself. He seldom pounces on his victim the first time, like other birds of prey; but first comes slowly along, and settles down on some conspicuous site near, the victims, and takes a very calm and cool survey of all the surroundings. As soon as all things appear to him to be favorable he quietly lets himself down among the fowls, hoping to induce some one of their number to fly off or drop down from its roost, when he, quick as thought, embraces the opportunity to swoop down and carry off the fowl. I sometimes fasten the trap with a staple, firm on top the stick, but I find this gives them a much better chance to tear themselves out of the trap. Now, I fasten it slightly on top and firmly in the stick, some two feet below the trap, with a chain or cord. — *Ohio Farmer.*

Buffalo Hide Horseshoes.

The shoeing of horses is still a somewhat rude, empirical art, and horsemen welcome all rational proposals promising any improvements. Every year attractive schemes come before the public; special shapes and modes of securing the shoe are propounded; sometimes shoes are promised to be readily fitted on without the need of heating, and without the services of the professional vulcan; occasionally they are vaunted as preventing slipping; some recent systems weld together iron and vulcanised indiarubber with the view of diminishing concussion; almost every system professes to prevent and cure contraction, corns, and other diseases of the feet, to lessen the wear and tear of the limbs, and thus greatly conserve the horse's usefulness. But the most promising and popular schemes for the improvement of horseshoeing have signally failed to realize the expectations of their promoters. Iron has hitherto proved the only material sufficiently hard and tough to stand the enormous wear and tear of shoes for horses working hard on unyielding stones. Iron, however, may some day be superseded by an equally compact and durable material. Such a material is believed to be produced by a new company with offices in Lombard Street, London, who are prepared to manufacture horses' shoes of buffalo's hide, rendered tough and compact by the chemical oxidation of the oils and by hydraulic pressure. Of the lightness and elasticity of such shoes there can be no doubt. On asphalt or other slippery roads they may perhaps afford a somewhat firmer foothold than the ordinary iron shoe; but the great question to be settled only by careful comparative experiment is that of durability. Will the buffalo hide shoes, without fraying, splitting, or wearing down unequally, continue for three weeks properly to protect the foot of a horse employed for six or eight hours daily on the hard streets or roads at omnibus, carriage, or heavy carting work? Unless the buffalo hide shoes are obtainable at about the same cost as those now in use, and further fulfil the important conditions just specified, they are not likely to take the place of the iron shoes. — *N. B. Agriculturist.*

Guelph Poultry Show.

The second annual exhibition, under the auspices of the Ontario Poultry Society, opened at Guelph on the 29th ult., and was beyond doubt the finest ever witnessed in Canada. There were something over eight hundred and fifty different entries, embracing almost every class of domestic fowls, pigeons, and cage birds; and, in the majority of cases, the displays were certainly excellent. In point of number Hamburgs took the first place, a fact which shows that this breed is becoming very popular in Canada, and deservedly so. The Plymouth Rock exhibition was very fine and attracted much attention; for beauty of form, symmetry and plumage, it perhaps exceeded all others. Light Brahmans were quite superior to anything formerly seen in the country, the size of some specimens being simply marvellous. Partridge Cochins, too, elicited high commendations. White Dorkings, though decidedly ahead of those shown last year, still left room for improvement. Silver Grey and Dark Dorkings were well up to the average. Amongst the Buff Cochins were some very fine specimens, but the display was small. White Cochins stood well in the estimation of fanciers, while the Dark Brahmans and Black Cochins compared very favorably with their class of last year. Spanish fowls were fairly represented. The show in Leghorns was small and, in quality, rather under average. In Games there was a marked improvement over last year. There were a few good specimens of Creve Cœur and La Fleche fowls, and a highly creditable display of Houdans, Bantams, &c.

The Turkey show, embracing bronze, black, white, and wild birds, was exceedingly fine, whether as regarded the number, beauty or weight of the birds shown.

Geese and Ducks were well represented, the Aylesbury and Rouen breeds of the latter eliciting unbounded praise.

The rest of the building was mainly taken up with pigeons, of which there were several varieties, carriers, pouters, jacobins, fantails, barbs, archangels, &c., all very fine specimens; rabbits, parrots, cockatell paroquets, silver pheasants, canaries, &c., in endless variety. The following are the total entries in each class:

Dorkings 30, Cochins 39, Brahmans 48, Black Spanish 14, Leghorns 16, Plymouth Rocks 9, Games 35, Polands 27, Hamburgs 85, Houdans 10, Creve Cœur 3, La Fleche 5, Bantams 42, Turkeys 16, Geese 32, Ducks 25, Rabbits 1, Pigeons 68, Pheasants 1, Canaries 18, Goldfinch 1, Black-bird 1, Green Parrot 1, Guinea Fowls 5. Total 532. Besides these there are a little over 300 entries for special prizes, which makes a grand total of about 830.

Shorthorn Sales.

An important sale of Shorthorns took place on Thursday, the 24th ult., on the farm of Messrs. J. Reading and H. Larter, con. 27 and 28, 6 Div. D., Township of Guelph, when the following animals changed hands:—

Cows and Heifers.

| | |
|----------------------------------|-----|
| Isabella, A. Joseph | 145 |
| Duchess of Wellington, F. Laymer | 145 |
| Jessamine, David Kennedy | 156 |
| Lady Moreton, F. W. Stone | 300 |
| Dairy Maid, J. Hauser | 200 |
| Lady, F. W. Stone | 150 |
| Victoria, F. W. Stone | 76 |
| Flora, A. Joseph | 88 |
| Lady Alice, H. Dunbar | 150 |
| May Flower, J. L. Squires | 100 |
| Merrmaid, Thos. Wardrope | 115 |
| Lady Ponsbury, J. Shuttle | 116 |
| Rosy, J. D. Wallace | 120 |
| Cherry Bloom, J. Buchanan | 115 |
| Lady Jane, J. Shuttle | 33 |

Bulls.

| | |
|------------------------------|-----|
| Duke of Wellington, L. Lashy | 46 |
| Seraphael, J. Buchanan | 205 |
| His Majesty, Geo. Patterson | 98 |
| Lord Moreton, Wm. Hardy | 69 |
| Mufus, Thos. Dunbar | 26 |
| Duke of Kent, J. Lashy | 56 |
| Lord Ponsbury, G. H. Brohman | 29 |

Stock Notes.

COL. SIMS of Kentucky, has bought of Col. Holloway the 11-month calf, 4th Duke of Hillhurst, for \$12,000, and has since refused \$18,000 for him.

THE LITTLE TROTTER, Major King, who was in Canada two winters ago, was raffled at Kingston, N. Y., about March 1st., 1,000 chances at \$2. He has trotted in 2:28.

STOCK SALES.—Last week Mr. Beattie, of Toronto, sold to Mr. W. Crozier, Northport, New York, a pair of Clyde mares for \$1,500, and the imported Clyde colt "Dinna Forget" at \$2,000; also a pair of imported Ayrshire cows for \$850.

MR. GREIG OF CLARENCE, U. S., sold last month three magnificent Canadian bred Clydesdale stallions, viz:—Sovereign, 4 years old, for \$975; Netherby, same age, \$1,475; and Scottish Champion, \$1,200.

DR. PAUL, TORONTO, has sold a half interest in his trotting gelding, St. Paul, who is matched to trot Black Mack at Woodbine Park next June, to Mr. Joseph Duggan, for \$1,000.

PRICE OF A ROAN DUCHESS IN AUSTRALIA.—The following memorandum has been received in England through Reuter's Telegram Company, from Melbourne:—"Melbourne, February 5, 6 p.m.—Samuel Meardmer, Melbourne, paid 2,200 guineas for heifer, roan Duchess, at Robertson's Colrac sale, January.

MR. JOHN THORNTON.—We see that Mr. Jne Thornton, editor Thornton's Circular, London, England, announces his intention, at the request of many English breeders, to visit America, this spring. He intends sailing Thursday, May 25th, and returning on July the 1st. It is thought that he intends to purchase and execute orders for short-horns for our English cousins. We bespeak for him a hearty and cordial reception at the hands of American breeders.

AMERICAN SHORT-HORNS FOR ENGLAND.—The *Live Stock Journal* says:—"The Inman s.s. City of Richmond, arrived in the Mersey on Tuesday, the 1st inst., having on board another importation of Shorthorns for the Elmhurst herd from America, consisting of seven animals—viz., Julia's Rose, 2nd Cambridge Lady, May Johnson, Julia's 2nd Rose, and Red Rose 14th, all grand heifers, bred by Mr. F. B. Van Meter; Duchess of Sharon, a truly superb specimen of this popular tribe. For wealth, quality, substance, and luxuriant coat, we have seldom seen her equal; and Grace Rose 4th. They have stood a very rough passage, and landed in excellent condition and bloom. This consignment will doubtless prove a valuable acquisition to Mr. Fox's already numerous herd, several being forward in calf to most fashionable sires in the West.

HIGH PRICE FOR A CLYDEDALE COLT.—Mr. John M. Martin, Jr of Auchendeman, has sold his Clydesdale colt, Prince George Frederick, rising two years old, to Mr. Alexander Weir, Newhousesmill, East Kilbride, for £500, the largest price, we fancy, ever obtained for a Clydesdale colt or filly of same age. Prince George Frederick is by Mr. Drew's renowned Prince of Wales, and is out of Botturich Maggie, a mare bred by Colonel Findlay, of Easterhill, of very pure Clydesdale blood, which can be traced back thirty or forty years. Mr. Martin had a full brother of this colt called Premier, two years older, which he sold when nine months old for £150. He is now giving great satisfaction in Canada. He has a filly foal, full sister, and the old mare is again in foal to Prince of Wales. Prince George Frederick was only twice shown—at Dumbarton last spring, where he was easily first, and at the last Highland and Agricultural Society's Show on Glasgow Green, where, after a stiff pull, he was placed second to his half-brother, Mr. Drew's black colt.

BIRTH OF A DUCHESS AT UNDERLEY.—We learn that Lord Beattie's 10th Duchess of Geneva (the cow which Mr. H. W. B. Berwick bought for his lordship at the New York Mills sale for \$35,000) calved, on Thursday last, another fine cow calf, which makes her third calf since her arrival at Underley; viz., Duke of Underley, calved January 18, 1874; a red cow calf, by 2nd Duke of Tregunter, calved January 15th, 1875; and a fine cow calf, by the same bull, on the 20th inst. If she and her produce were offered for sale now, they would, no doubt, realize an enormous amount, but there is no chance of that occurring, and as she is not nine years old until March, and being a cow of great substance and constitution, and such a regular breeder, it is impossible to estimate the value of herself and produce to Lord Beattie. The 10th Duchess had three calves in America, viz., 3rd Duke of Oneida, at present in service in an American herd; 6th Duke of Oneida, at Mr. Leneys, Waterinbury, Kent; and 8th Duchess of Oneida, which was also bought at the New York Mills sale for Lord Beattie at \$15,000. She has since produced a bull at Underley, which was sold last year to Sir Curtis Lampson at 1,750 guineas.

SALE OF SHORTHORNS.—Mr. John Outhwaite, of Baines, England, is to have a large sale of Shorthorns on the 23rd inst. We have not seen a catalogue yet, but we know that several of the animals have not what could be called long pedigrees, though they are loaded with showyard laurels. Many will be curious to see how such a herd will sell. Whatever may be thought of the somewhat short pedigree of some of the animals, there can be no mistake about the great excellence of the individual specimens. Any judge can see, as thousands have ere now admired, the wonderful merits of the various animals composing the herd. In 1872 the Baines herd had at least one first at the Royal; in 1873 it had two firsts and some minor awards at the Royal; and in 1874 it had three firsts and one second at the great national show; it had the premier bull and premier cow also in 1875, though neither was sent to the Royal Show. Mr. Outhwaite had some heavy losses by the recent death of Vivandiere and two of her progeny, but there is as much of the cream of the herd—which for years has been distinguished for its large proportion of "cracks"—left as cannot fail to produce some excitement and enthusiasm around Mr. Thornton on the 23d March, 1876.

Seed and other Catalogues.

W. A. BURPEE'S catalogue of high class land and water fowls has reached us. It is neatly got up and very full. His address is Philadelphia.

J. & J. H. GILGORY, of Massachusetts, have issued their annual seed catalogue for 1876. It is a well illustrated pamphlet of 52 pages, and contains a large amount of useful information.

J. R. V. HAWKINS' fourth "Annual" is also to hand replete as usual with invaluable hints in every branch of horticulture.

GEO. LESLIE AND SONS, Toronto Nurseries, issue an excellent catalogue of about 70 pages, embracing everything in their line, and in great variety.

VANDERHILT BROS., of New York, publish this year a very superior number. It is well worth perusal.

L. R. CASE'S, Richmond, Indiana, catalogue is one of the best illustrated that has yet reached us.

HOWLY & CO., Boston, issue a 90 page list of all kinds of garden and vegetable seeds—well illustrated.

J. A. SIMMERS' (Toronto) Catalogue for 1876, is one of the best that has yet reached us. It is beautifully illustrated, and contains, besides a full list of seeds, fruits, &c., some most valuable hints for the general cultivator.

Patrons of Husbandry.

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362. LILY OF MERSA.—John Hooker, Master, Blytheswood, C. Ogle, Secretary, Blytheswood.
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374. DUNTRON.—Donald Blair, Master, Duntrou, Hugh Currie, Secretary, Duntrou.
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378. MAPLE AVENUE.—Charles Horsman, Master, Thamesford, Henry Horsman, Secretary, Thamesford.
379. EAST MISSOURI.—Francis Patterson, Master, Thamesford, J. G. McKay, Secretary, Thamesford.
380. WHITFIELD.—Thos. McKee, Master, Whitfield, George Laking, Secretary, Whitfield.
381. BEAR ISLAND.—Jesse Parent, Master, Upper Queensburg, N.B., J. B. Murch, Secretary, Bear Island, New Brunswick.

HYPOPHOSPHITES.—An article called Fellows' Hypophosphites has been advertised in the Pioneer for several months, but we gave it little thought, except to collect the bill, until an instance of its remarkable effects came under our observation. A few years ago symptoms of consumption exhibited themselves in the case of S-K-, Jr., Esq., of Calais, who belongs to a family predisposed to the disease. His friends became alarmed at the progress of his malady, and realizing the chances as against him, he began to take Fellows' Hypophosphites. Instead of growing worse his health improved, and he now weighs fifty pounds more than he did before he began to take the syrup. We saw him last week, the picture of health, tipping the scales at two hundred avoirdupois. We have no interest in recommending Hypophosphites, except to benefit the sick and afflicted.—Arostook Pioneer.

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Correspondence

YOUNGVILLE.—We cannot recommend rape for feeding milch cows.

C. H.—The wart-like sores you speak of are probably the result of irritation produced by feeding some inferior kind of hay or straw; barley straw frequently induces the trouble. We would recommend you to remove with the knife those that have only a slight attachment to the skin, and afterwards dress the parts with carbolic lotion, one part carbolic acid to forty parts water.

R. A. L., of South Haven, Michigan, writes, "If your agricultural population are represented by the CANADA FARMER, Ontario must be on the high road to prosperity, for most certainly we do not have in the States its superior, in all that constitutes a representative of the local farming interests. Each department of the paper shows careful labor, and earnest devotion to its claims. But few of the intelligent workmen, in the field or shop, can afford to lose the vast amount of useful information each number of the FARMER so cheaply offers them."

MANUFACTURE OF COCOA.—We will now give an account of the process adopted by Messrs. James Epps & Co., Homoeopathic Chemists, and manufacturers of dietetic articles, at their works in the Euston Road, London.—See article in Cassell's Household Guide.

EPPS'S COCOA.—GRATEFUL AND COMFORTING.—"By a thorough knowledge of the natural laws which govern the operations of digestion and nutrition, and by a careful application of the fine properties of well-selected cocoa, Mr. Epps has provided our breakfast tables with a delicately flavored beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack, wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly nourished frame."—Civil Service Gazette. Made simply with boiling water or milk.—Each packet is labelled—"JAMES EPPS & CO., Homoeopathic Chemists, 48 Threadneedle Street, and 170 Piccadilly; Works, Euston Road and Camden Town, London."