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THE CANADA FARMER



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NEW SERIES.

The Field.

Turnip Raising.

The different varieties of common turnips—that is, not including the “Swedes”—may be comprised under two heads—the white and the yellow fleshed, and these bear much the same relationship to each other in their economical value, as does yellow cream to blue skim milk. The white-fleshed are usually the table turnip in England and elsewhere by professed cooks; but the yellow-fleshed are the only table turnips used by the Scottish peasantry who have any knowledge of the subject at all.

In the art of cookery, when a white-fleshed turnip has been boiled until it is soft, it is pronounced “done,” and fit for the tables but it is far otherwise when the north country housewife cooks turnips for the table. Small-sized, yellow fleshed ones are selected, because large-sized ones are often coarse in flesh and poor in juice; and here I would remark, in passing, that this is precisely the case with the sugar-beet—the smaller sized roots are richer in sugar than the larger sized ones. The turnips, when pared, are put into an iron pot to boil with about twice their bulk of water; and this is done at an early hour in the morning; and, be it observed, the turnips are for the family supper, which will not be on the table till 7 in the evening, and by that time the turnips will have boiled or simmered some 10 or 12 hours. The natural consequence of this long boiling is to reduce the broth or liquor to less than half its original quantity; but the boiling has to be so managed that whilst the turnips simmer all day long, they neither cool below the boiling point, nor boil so hard as to evaporate all the syrup—for it comes to syrup at last—and so troublesome is the process of turnip boiling in this way, that it is only by way of a treat that the thing is indulged in at all, and children speak of turnip porridge as worthy of being remembered to the end of their lives.

Now, it must be very evident to hundreds as well as to me that the true character and usefulness of the common yellow fleshed turnip are not generally known, and when it is explained that plain boiling for a few hours converts the natural juices of the turnip into a syrup or sweet wort of the highest importance as cattle food, and by no means to be lightly spoken of as food for man, the subject is worth following out a little more than it has been in this direction.

In the first place, the object is not to try for a crop of large turnips, but to secure the greatest weight of turnips of small or moderate size; and this will be best secured where the rows are on the level ground, and not on raised ridges, for if we suppose that the ridges are 30 inches from centre to centre, and that flat drills are only 20 inches apart, there will be one-third more plants on the same land. In cultivating the turnip for seed, these are the usual distances apart of the flat drills, and in the ordinary cultivation of farmers' turnips, the raised drills 30 inches apart may be taken as the rule. In order to show that the flat drill system is no upstart, I may mention that my father grew his turnips for seed on the flat drill system about the year of the three sevens (1777), which will very shortly be one hundred years ago, and for many years in my time a very spirited trade was carried on in Aberdeenshire in the turnip seed line, so that I may be allowed to speak with some authority on the points, for I may say that the very flesh upon my bones, ay, and the bones themselves, have been built up by the profits arising out of transplanted turnips about the size of a man's clenched hand, and any one acquainted with the subject knows well that the flesh of this sized turnip is usually firm, without being tough, and not soft in the centre, as most large turnips are. The Highlander has long ago made bad whiskey out of turnips and potatoes, and would do so still, no doubt, were it not for the turnip taste which the liquor retains when made from turnips.

The simmering process above narrated must not be understood as mere boiling or cooking of turnips, it is syruing the juices of the turnip, and when so converted into wort or syrup, meal, bran, &c., can be added to it as food for cattle, just as linseed jelly as added to dry provender. It is pretty clear that in the great field, of all the true grasses the sugar is the pioneer of the starch, and the starch is in turn the reservoir or granary of the sugar, for the sweet leaves and stems of the corn plants tell first of the sweetening or malting of the grain, when the radicle and plumula parted company, and the one took downwards to the earth and the other upwards to the air, but at the end of the race they balance the account, and the transient sugar gives place to the indestructible starch, packed neatly in the form of grain and grass seeds, for the great purpose of feeding the world with bread corn. When grass is in the saccharine form we find the neat cattle and other grass-eating animals feeding on the green herbage, and this may be reckoned their best food, and whilst the

grass is soft, green and sugary to the taste, these animals will show by their fine condition that they are really their perfect state, for with a quantity of healthy grass they want for nothing. —London Agricultural Gazette.

Cultivation of Basket Willow.

The soil for basket willows should be of a deep sandy loam, well drained, and thoroughly prepared; and the situation ought to be low, level and naturally moist; and if there is a command of water for irrigation, so much the better. It will succeed, however, on a somewhat dry soil, in which the shoots will not only be small, but larger, tougher, and more compact and durable than when grown in a soil that is rich and moist. In dry soils, also, the growth of the plant is much slower than when it has been impelled by water. The best situation, when the object is free and rapid growth, is along the banks of river, and brooks that pass through a level country, and on the small islands which frequently occur in the midst of streams, in hollows or swales; also the soil which is composed of rich, soft, earthy particles, and which can be layed dry, are the most eligible sites for converting into oseries; and if such can be occasionally soaked with water during the dry months of summer, the situation may be considered as perfect.

Completely draining the site for a basket willow plantation is the first step towards its formation and the foundation of its success, and consequently of the profit to be derived from it.

All willows may be propagated by cutting, though some rare Alpine kinds with difficulty take root. Some species also grow very readily from seeds. The cuttings which may be grown in nurseries previously to their removal to their final situations, should be made of one year old wood, about a foot or sixteen inches in length, cut straight across at the lower end, and in a sloping direction at the upper end. They should be planted perpendicularly in the soil, to a depth of three fourths of their length, with the earth firmly pressed to them, more especially at their lower extremities. The reason the lower ends of the cuttings are cut directly across, and no sloping like the upper ends, is that they may form equal colossities all around, and consequently throw out an equal number of roots from these callosities on every side.

It has been found by experience that when a cutting is inserted in a sloping direction, roots are protruded nearly equally through all that part which is buried in the ground,

unless the soil has become more closely pressed against one part than another. In this case, the roots will be protruded in great abundance; and if the soil has not been pressed to the lower extremity, it would probably produce no roots at all at those points, but rot.

The upper extremity of the cutting is cut in a sloping direction, for the purpose of shedding off the rain. The top end of the shoot, as far as it appears soft, being unripe, should be discarded, because such wood will only produce weak plants, and will not make so good roots the first season as the firmer parts of the shoots will do. Pieces of two year old shoots of the same length as above, and cut in the same manner, may also be used; but these are more expensive, and no better than the former.

The best season for planting cuttings of two year old wood, in a well drained soil, is late in autumn, in consequence of which the buds will well during the winter, and be ready to grow with vigor in the spring; but in wet soil, and in climates where they are liable to be loosened by winter frosts, cuttings planted in autumn should be made firm a second time in spring. The proper time to plant the slips of one year old wood, in a high latitude, is a few weeks previous to their natural period of putting out leaves. The cuttings may first be planted in a nursery, and removed the autumn or winter following, or they may be planted at once in the sites where they are finally to remain. In either case, if the soil is not sufficiently moist, due attention must be paid to give them water in dry weather.

The proper season for cutting the basket willow is in autumn directly after the fall of the leaf.

The advantage of cutting at this period is, that the buds which are left to produce the shoots for the succeeding crop immediately begin to swell and grow in strength during the winter, in consequence of which they make much earlier and more vigorous shoots in the following spring. As soon as the rods are cut, they are generally tied up in bundles, three feet nine inches in girth, and if they are not intended to be used green—that is, with the bark on—they must be set on their thick ends, in standing water to the depth of three or four inches, where they may remain during the winter and spring, until the shoots begin to sprout, when they are ready to be peeled.—Ohio Farmer.

On the Growing of Farm Crops in Winter.

If there is any work which the farmer should give his attention to during the present season, it is that of preparing to make money in winter by growing his crops at that time of year when he can give them the most attention. A good many will ask how it is possible to grow crops in the winter. Well, we will explain, for there are a great many who do not seem to understand how it is done.

It is well settled by experiment and observation that land left to itself will only grow a minimum quantity of grain or of grass, but if it is manured it will produce heavier crops. Ten acres of well-seeded grass land from which last summer a ton and a half of hay per acre has been taken, will not be estimated to produce any more than a ton and a half next year. Yet if it is top dressed with a coat of manure at the rate of ten loads of

manure per acre, or a hundred loads to the lot, will not the owner look for an increase not only of grass, but in the corn or grain crops that succeed the grass? When is manure made in the greatest quantity? Is it not during the winter? Well then, is not the business of making manure the business of growing increased crops? Hence we say that the making of manure is one of the most important and productive occupations which the farmer can engage in. In fact we consider that in the manure is one-half the profit of feeding the live stock which is sent to market. The whole of the hay, corn fodder, straw, oats, meal, that is fed to animals contain a certain proportion of marketable material which are, if skilfully handled, the animal manufacturers into salable articles, which may be wool, or butter, or pork, or beef or mutton. But all these articles of food contain also a certain proportion of substance that is unfit for market, and which is voided, but which is valuable to grow crops, and this is the manure. There are at least five months of the year which the manufacture of manure and its management should be the chief study of the farmer, just as much as the study of how to get the greatest increase of beef out of the stores of forage and grain. When we learn that wheat grown after wheat without any application of manure to the land for a series of twenty years in succession, will only yield at the rate of from 10 to 13 bushels per acre, and that the same quality of land manured each year with twenty tons of manure has produced at the rate of 33 to 46 bushels per acre during the same time, it is readily understood that the making and care of manure is nothing else but the business of growing the crops in winter.

It is estimated that every head of live stock on a farm will consume at the rate of 3 lbs. of first quality timothy hay for every 100 lbs. of live weight, and not increase in weight. This food passes through the animal and is voided as excrementitious matter, which is either solid or liquid. All this excrement contains elements which not only are themselves necessary for the growth of plants, but it also has the property of rendering the soil that comes in contact with it richer in these elements, by effecting changes and modifications, because the excrements contain the fertilizing materials in a condensed form, and it may be advantageously mixed with other materials, such as muck, clay, male, loam, that not only serve as carriers, but also, by the chemical changes effected in their own composition, become themselves powerful aids to promote growth in vegetation, providing the materials out of which plants may be perfected, either in their foliage like the cabbage, in their roots like the turnip and the beet, or in their seed as in the grain crops.

This valuable material which is the foundation of success in the profitable conduct of the farm, is probably the most abused, most wasted, and the least cared for of any article on the farm. It is generally shovelled or forked out, so that it may be got away from the stable in a sort of a heap, where the rain and the snow and the winds may do their best to carry off and waste it. When this is not the case, it is thrown in heaps where it heats and burns up by its own internal warmth, and is reduced in quantity and value to half its original worth. We believe that the waste of manure for the want of proper treatment in this State in a single year cannot be estimated as less than equal to a loss in the wheat crop alone of five bushels per acre, or six millions of bushels. What the estimate may be on the loss of hay, grass, corn and other crops, we may not dare estimate, for the figures would be so trifling that they would seem like exaggeration.

Measurement of Hay.

Many farmers who are far from scales sometimes have difficulty in estimating hay. In relation to the cultivated grasses the Massachusetts Ploughman says:

Many farmers, particularly those who have been building a new barn within the last five years, have the advantages of good hay scales, and know, in consequence, exactly how much English hay the farm has yielded, but the great majority have no such convenience, and they must get at it in some other way. In such cases there is nothing left better than the simple measurement, but that is sufficient for all practical purposes. It can never, in the nature of things, be depended upon for perfect accuracy, because so many elements are involved, as the character of the hay, whether timothy, red top, or clover, the time during which it has been stored, the depth or height of the mow or the "bay," the time when it was cut, etc.; but bearing the modifying circumstances in mind, we can arrive at a very close approximation to exactness, as we know from experience, having sold hay by measurement, with the right to weigh at the buyer's option and expense, and the results almost invariably justified the estimate.

We allow for timothy, red top, and similar grasses, four hundred and fifty cubic feet to a ton at the bottom or lower half of a "bay," that extends from the floor to the barn beams, and five hundred and fifty cubic feet for a ton at the top or upper half of such a bay, after it has lain a few weeks and settled. Of clover hay on a scaffold it will take about six hundred cubic feet for a ton after it has lain, say three months. It will be seen that the average of the bay full of red top and timothy will not be far from five hundred cubic feet to the ton, varying of course somewhat by the circumstances alluded to, that is, the season, the time of cutting, the thoroughness with which it was cured, the time it was settled, etc.

A little testimony on this point may not be uninteresting at this time. A farmer in Uxbridge gives four hundred feet in a mow twenty feet high, twenty feet long, and twenty feet wide, as the lowest number of feet he ever estimated. He says, "In a scaffold of hay eleven and a half feet square and nine feet high, making 1,190½ solid cubic feet, there was by actual weight 5,076 pounds of hay; or a little over two tons and a half of hay. The hay was upland interval, resembling red top. This gives a fraction less than four hundred and sixty-nine cubic feet to the ton. Under ordinary circumstances five hundred solid feet of well-packed, not very close hay, is considered with us to be a fair estimate for a ton."

A farmer in West Enosburg, Vt., says: "When there is a large quantity together, 400 cubic feet will make a ton, but where only a small quantity like a scaffold is stored, it will take for a ton not far from 500 cubic feet. It depends something on the quality, but I am speaking of good herdsgrass hay. I saw a scaffold measured and weighed a few days ago. It was twenty-six feet long, eleven feet wide, and nearly five feet high, making 1,430 cubic feet. It weighed 5,500 pounds, so you must see it varied but a fraction of 500 feet to the ton."

A farmer in Freeport, Me., says: "For a mow forty feet long, sixteen feet wide, and fourteen feet deep, well settled, the common estimate is 425 feet to 500 cubic feet to the ton. For some fifteen successive years I have pressed hay in my own barn for a mow less than the above, and the average number of feet required, including tare, which is above five per cent., has been about 425 feet per ton."

It will appear from these statements, that as a general average rule a cube of eight feet will make a ton of timothy, and we should allow about a quarter more for clover. If there is a considerable mixture of clover, as there frequently is, the proper allowance must be made for it, and it will require the exercise of some judgment and skill to get at it. So if the hay is very fine and unusually solid, it will require a less number of feet to the ton.

Now to make a calculation as to how many head of cattle it will do to attempt to winter, farmers call it in the rough about two tons to a cow, and making allowance, of course, for other stock according to the age and size, and for other feeding substances, like roots, etc. As a general rule it is well to stock pretty well up to your capacity, and if likely to come a little short, buy grain.

Oxen vs. Horses for Farm Work.

I have used both horses and oxen on a farm, and so far as economy is concerned, my preference is decidedly in favour of the latter. Of course, one or two horses are indispensable for riding and light work, where speed more than draft is required. But in heavy work, such as plowing, hauling, etc., oxen are certainly ahead of horses in point of economy.

Suppose we take a glance at the comparative cost of oxen and horses. As a general thing, a yoke of cattle can be had for about the same money as a good farm horse. To farm right a man must have at least two horses; than there is the rigging necessary, which will cost some fifteen or twenty dollars more than the ox rig, which will make the difference of the price of one horse and nearly the price of the rigging in getting ready to hitch to the plow or waggon.

With the price of the second horse, another yoke can be bought, and then the farmer has a double team which he can do anything with. Is a tough sod to be plowed, he can roll it over easier, quicker and better than he can with two horses. If heavy hauling is to be done, the two yoke are equal all the time to four horses, except to go a great distance. I have said an extra horse is necessary, but no more so with two yoke of cattle than with two horses instead, as there is always need of an extra horse.

But the grand point in economy is the expense of keeping. Horses require three or four times more attention than oxen. They must have plenty of green feed, beside stabling, currying, etc. Now, oxen want none of these attentions, but in summer time they will do good service on pasture alone, and in winter they will thrive around a good wheat stack. When you wish to hitch up, with oxen it is short work, for the simplicity of an ox rig contrasts wonderfully with the multiplicity of straps, buckles, chains, etc., for the purpose of harnessing up a span of horses. As for driving cattle, it seems like a mean, provoking business. I once thought I never could have the patience, but now I prefer driving oxen to any kind of hauling on the farm. Oxen, when correctly trained, are more obedient to the word than horses, and it is only when cruelly beaten that they are stubborn.

Then why are not oxen more generally used, if they are so much superior to horses? I suppose it is because people are governed in that particular as with almost everything else in the world, by appearance. It looks like slow work, tedious and troublesome, besides, to plow and haul with cattle. But let the man who has tried both, sum up at the end of the year, and he will find that oxen are actually the fastest after all. I

admit, however, it is a little more gratifying to a taste for the fine and graceful to follow a plow drawn by a nice pair of horses. But when I consider the cost, this is a pleasure I must forego, as it is paying too dear for the whistle. Not that I don't appreciate a fine horse, for I do; but I don't want the life and spirit worked out of him by making him do ox service. Then when I hitch him to the buggy or carriage he will contribute, by his life and activity, to my pleasure—and vanity, if you please.

When a horse gets old and worn out, he is fit only to be "traded off," or if not traded off, he is a pensioner at the barn door of the kind-hearted farmer, and finally a feast for the buzzards. But an ox, when he gets old, is put up and stall fed, making first-rate beef quite a difference in the end.—*Cor. Ohio Farmer.*

When to Transplant Trees.

If we may judge by the number of inquiries received at this office, the interest in fruit-culture has never been more active than at the present time. Many persons are asking whether it is better to transplant in fall or wait till spring. This question has always been and seems likely to continue an unsettled one, even among the most intelligent and experienced men. With large fruits, including pears, apples and peaches, much more depends upon the condition and preparation of the ground than upon the season at which the transplanting takes place. At different times, and under different treatment, we have instituted experiments, the results of which we hoped might serve as a guide, but as yet nothing definite on this point has been determined. On four or five occasions, in putting out lots of 200 to 500 pear trees, half would be planted in the fall and the other half in the spring. Twice there was a very noticeable difference in the growth of the trees for a year or two, but invariably this difference would disappear, so that at the end of five years one could not positively distinguish between them. With tall and weak trees there is serious objection to fall planting. The winter and early spring winds will, unless the trees are staked, sway them backward and forward to such an extent as to seriously disturb and displace the roots. This is especially true of cherry and spinning apple trees. When this evil is guarded against, then fall has some decided advantages over spring planting. For instance, in the fall there is less pressing work to be done, and therefore more time can be given in the transplanting to details that are important to the welfare of the trees. Again, the ground is usually during autumn in better order for a longer period, so that there is no necessity of hurrying forward the work, as is frequently the case in the spring. For this reason we have on different occasions recommended fall planting of apples, pears, peaches and grapes, nor do we see any good reason to change opinion in this respect. There is no doubt, however, that, all things being equal, the spring is decidedly the best season in which to do the work. But the frost may remain in the ground till the middle of April. Following this may be a spell of wet weather, keeping the soil heavy and cold, and unfit to plant trees in, and thus the time be so shortened that the job if done at all has to be done in a hurry, in which event many important minor matters are likely to be neglected. Better wait a whole year than run the risk of planting the trees in wet ground under any circumstances.

Before planting see to it that the ground is in good order, thoroughly pulverized by plowing, cross-plowing, and subsoiling, until every

part of it, to a depth of 18 inches, is well disturbed. For fruit trees, ground should be in good heart, but it is a great mistake to suppose that they need to be planted in rich garden soil. Ground that will give 150 to 200 bushels of potatoes to the acre is strong enough for them or for grapevines. Well-rotted yard manure applied a year or two in advance will best bring the soil up to the standard of quality. At the time of setting, some finely-ground bone or super-phosphate of lime to sprinkle around the roots will be of service. As to the season, however, we repeat that with a good soil in good order, properly mellowed, it will be safe to transplant apples, pears, peaches or grapes, either in spring or fall.—*New York Tribune.*

Potatoes on Fall Plowing.

Whatever will in these days of degenerate potatoes—from disease, potato beetles, and other causes—promote growth early in the season, is of value to the farmer. One of the most important of these on clays and loams is fall plowing. These are well known to be the proper soils for the crop, except among market gardeners, where quality is sacrificed to earliness; with such, sandy land highly manured is the best. We have never failed in getting a crop, planted as soon in the spring as the soil was in condition and to hasten this we have planted in well drained soil, plowed deeply in the fall, leaving the surface as rough as possible.

As soon in the spring as the soil is friable, furrow your land. If manure is used place it over the tubers or eyes, when planted, and cover with not less than four inches of earth. Covered thus, with manure, the potatoes will not appear above ground so early as if planted on the manure; but they will appear in due time, and before the crop is ripe will have caught up; and if early sorts are planted, as Early Rose, Early York, &c., the crop will ripen before the season is far enough advanced to generate the condition inducing rot. Of course if the beetle makes its appearance it must be attended to; but these pests are seldom so destructive with early as with late plantings.

A peculiarity of the potatoe is that it requires a cool, moist soil. The hot sun glowing on the bare earth is destructive to this coolness and moisture. If this extreme heat is accompanied with or follows hard showers, it almost always induces disease in the tuber, and consequently rot. For this reason, only rich land should be used, that you may plant the crop close enough to completely cover the ground with foliage; and planted early the plants will completely shade the land before the advent of extremely hot weather.

On new land, or half rotten sod, we should not advise the application of strong nitrogenous manure, for it constantly does depreciate the quality of the potatoe. Mineral manures on soils moderately rich in nitrogen, or those elements contained in horse manure, always give satisfaction. Plaster, marl and phosphatic manure may always be indicated, and upon any soil, after the final working, mulching the land between the rows with long manure, especially horse manure, we have always practiced with the best results; it keeps the earth cool and moist, and feeds the plant just at the time it needs it moist. Thus treated, the tubers will generally be large, healthy, and consequently farinaceous.

If the soil, from having been previously badly worked, or from natural causes, is mechanically disorganized, and is inclined to run together, of course it must be replowed in the spring! This may be lightly done, not more than four or five inches deep, but

upon ordinary soils the spring plowing may usually be omitted. The advantage of fall plowing is undoubtedly owing to the fact that the frosts of winter break down and thoroughly comminute the soil, allowing a free passage for the water to run off through the dead furrows, as also a more free percolation through the soil itself. A soil so acted upon, not only takes up from the atmosphere the floating elements of fertility it contains, but its porosity allows it to take up heat also and store it more surely than on less disintegrated or lumpy soils.—*Working Farmer.*

Deep Ploughing.

It has been truly said that an increase of one inch in the average depth of ploughing throughout the United States would produce a larger amount of profit, as compared with present results, than all the gold received from California. We believe in this assertion; but we do not believe that all soils, without being previously subsoiled, are fit for this immediate increase in depth. We know that oven clay subsoils, which approach within a few inches of the surface, after being thoroughly subsoiled, are so ameliorated as to be capable of admixture with the immediate surface soil; and we are equally well aware that subsoiling cannot be performed with any profit in clay subsoils containing excessive amounts of water that such soils must be first underdrained and the subsoiling precede an increase of depth in surface plowing. But there are millions of acres capable of being plowed to double the depth to which they have ever received an incision from a tool of any kind, with increased profit. Even in the State of New York there are thousands of acres at this time, which have never been plowed to a greater depth than four inches, composed of a loam entirely ready to be disintegrated by a surface plowing to the depth of twelve or fifteen inches with increased profit, and there are few soils that may not be at once plowed to a depth of an inch or more than its former depth. The adage "that many farmers own another farm immediately under that which they now cultivate," cannot be too often repeated, and the judicious farmer, whose will has been so often quoted, as having informed his sons that he had buried a sum of money at a depth of twelve inches somewhere on his farm and that they must find it, improved the quality of their products by the disturbance of the soil more than he would benefit them by the supposed legacy by direct bequeathment. Less manure will produce a larger amount of crops in a deeply disintegrated soil; and it is not true that the deeper you plow the more manure you require. It is true that the more thoroughly manure is divided, the greater will be the amount of the crops produced, and this is the more certainly brought about by deep than it is by shallow plowing.

No practical farmer can doubt that in deeply plowed soils, crops are less annoyed by drouth and by insects; and if plowing is useful at all, it must be useful precisely in the same ratio to the amount of soil disturbed, provided that the roots are capable of appropriating a greater amount of soil by its disturbance. Who doubts that roots will travel to the depth of twelve or fifteen inches, or even double that distance? Who doubts that the lime passing down through the soil, will rest on the surface of a cold and undisintegrated subsoil? Who does not know that many farms supposed to be worn out have been revived by the increase of a few inches in the depth of plowing? Who will longer be contented to use a pitiful one-horse plow, skating it through the soil like a harrow with one tooth, when by deep plowing he can more than double his crops?—*Working Farmer.*

Mulching Trees.

The greatest source of death or want of health in trees is the absence of mulching, or perhaps the proper kind and quantity.

As before stated, many things are ruined in summer time, by either drying out of the ground or the growth of weeds and grass that get the lion's share of the moisture. This is true, especially the first season after planting. We are not unmindful of the fact that some have good trees without mulching. In such cases, as a rule the soil is well cultivated, the grass and weeds are kept down, and the earth gets a stirring up occasionally.

In the case of newly planted trees, winter protection is of great importance. In the first place a good mulching of manure for instance will keep the ground from hard freezing a long time. Hence the roots become healed over a measure, and well established for their work in spring.

This is one of the great reasons for planting all very hardy things in autumn, such as forests, the many kinds of Siberian apples, currants, gooseberries, as well as the hardy shrubs. As a matter of course, if the planting is done early in autumn it is very much better, while very late transplanting we never recommend in this latitude.

Another advantage that we gain in mulching is protection against frequent thawing out, which causes the death of many things that are really hardy.

Nature, we all know, provides the best of protection in the way of leaves, that shed about the roots annually. Why not, therefore, imitate her example, and thus deal justly with the trees we plant?

Coarse manure is good for all fruit and forest trees except the various evergreens. This acts also as a fertilizer, which is very essential, except in case of wonderful rich soil. Leaves in many cases are splendid, as they do not cause rotting, as is the case of some things. Earth is frequently piled up a foot high about the trunk of trees in autumn, especially where there is danger of injury by mice. If straw is used it should not be put up next to the tree, but earth instead, as it is better in case of leaves. Some use sawdust, which we think a very good thing for the evergreens.

In the case of large planting of forest trees a thin layer of straw can be laid upon the ground, and if any kinds are relished by the mice, the snow must be tramped down in the fore part of winter. Fine manure, leaves or sawdust are good for one year old seedlings, which are badly killed sometimes when we have but little if any snow. The roots of old fruit trees are sometimes killed for want of winter protection.—*St. Paul Press.*

Encouragement of Birds.

I hardly know what we could do without birds, for they destroy nearly all the injurious insects in an orchard. I have found in my father's orchard this year about 75 birds' nests, about 30 of which are chipping birds. They have laid about 300 eggs, and hatched about 350 young ones. How many of these would have been destroyed by hawks and owls had they been in the woods, and how many would have been destroyed by bad boys and cats had I not looked after them? And I think every one ought to encourage the birds the best he can. I like the blue-birds best; they feed mostly on bugs, cut-worms and grasshoppers. The wren is also a favourite of mine. It is a very active and industrious little bird. They destroy a

great many insects that other birds do not. Each kind of bird destroys a certain class of insects. Wrens destroy millers mostly. And for this reason all birds should be encouraged. Wrens and blue-birds will build in most any little house. The house should be put up out of the reach of mischievous pussies. The house for the wren should be made small so the blue-birds will not occupy it. The robin feeds mostly on cutworms, and in the spring picks out of the ground cutworm chrysalis. Swallows and martins live mostly on flies and bugs. The orioles and red tanagers eat tent caterpillars and curculios. The nuthatches prey on bugs and worms on trees. The ground birds live mostly on worms on the ground; and are often destroyed by snakes. The woodpeckers hunt out the apple tree borers and destroy many beetles. The blue-jays destroy the tent caterpillars' eggs. The cedar or cherry birds destroy cankerworms. The chipping birds are easier tamed than most other birds. They live principally on bugs and worms. Nearly all the birds I have mentioned live on insects and worms that are injurious to all kinds of vegetation and fruit. And most of these birds remain with us during the growing season, and raise two families of young, which also remain on the premises if not driven away by noisy boys and dogs. The number of insects and worms destroyed in a small orchard annually is immense; and were it not for the birds, any one can see in a few years we could not raise any fruit.

A New Wheat.

A week or two ago Mr. Shirrif, of Salt-coats, East Lothian, called the attention of farmers to the excellence of a new red wheat which was named "square-head." This wheat, it was stated, was wonderfully strong in the straw, very prolific, and of good quality. It is found of manure, and should be sown thick, at any rate 4 or 5 bushels to the acre. We scarcely think that Mr. Mechi would agree with the desirability of scattering so much seed over the ground even in the case of "square-head." However, this is Mr. Shirrif's idea about the proper quantity to deposit in the soil. Mr. Hope, Fenton Barns, who has long been a grower of wheat himself—Fenton—at the last meeting of the Haddington Farmers' Club, testified to the superior excellence of the new wheat over others; and as this testimony was not tending to his own advantage, but the reverse, it may be presumed that the cereal is all that it was at first stated to be. Mr. Hope stated he had experimented with it on a small scale last year with a parcel sent from Mr. Scholey, of Eastercroft, near Goole, and he found that it yielded 6 bushels more per imperial acre than Fenton wheat, and did not lodge nearly so much—an important consideration in such a treacherous climate as ours. The quality Mr. Hope expressed his belief would certainly not be inferior to any other variety of red. Mr. Hope quoted an experiment conducted by Mr. Scholey, of Eastercroft, with four different varieties—the square-head, Fenton, woolly-eared, and Browick red—the results being—square-head, 150 stones; Fenton, 138 stones, woolly-eared, 112½ stones; and Browick red, 124 stones; but in a hollow where the square head was sown the grain was destroyed, so that Mr. Scholey calculated it exceeded the Fenton by nearly 6 bushels per imperial acre, as he himself found it to do. You would hardly, said Mr. Hope, believe the crops Mr. Scholey had grown in the two previous good years. He would, therefore, recommend the members of the club to make a trial of it. He intended to sow all he had grown himself.—*Scottish Farmer, 11 Nov., 1872.*

Large or Small Teams for the Farm.

A small team, where but one is used, will not do. Deep plowing or sod plowing is too heavy for it. We have known instances not a few where a pair of light horses were exchanged for heavier from a matter of sheer necessity.

But shall heavy horses then be secured? We have known them to be exchanged for lighter, not a light team. Strength, activity, endurance, these are qualities in a horse that are wanted, and a good frame to hold them and give them full play.

It is the medium-sized team, sufficiently heavy to carry a good load or plow sod without flinching or succumbing, that is the most profitable—horses of mettle and strength, yet tractable; sure and quick of foot—that will do much light work in a day, and yet answer for heavy.

Each one knows, or should know, what his work is, and secure his team accordingly. If the work is a large proportion of heavy work, he wants a heavier team; when there is much light work, a lighter. But in all cases he must see to the treatment of his team—that it is not abused or overstrained. Hard work, and hard, that is, strong feed, will soon wear out a horse. If to this is added neglect or abuse, there will be but about half the service gotten out of the team. They will die at 16 or 18 years, and fail sooner; whereas we have known horses to live to the age of 30 years and more, and do a fair day's work.

A heavy horse is generally a slow and unwieldy horse, good enough for heavy drafts; but there it ends. The most of the farm work is not of the heaviest kind, and a spry, rather light horse, will do it cheaper than the heavy Percheron, or cart horse; besides, he is easier to handle. But for a single pair, as we have said, a light horse will not do. Avoiding extremes is the best doctrine. Secure a good sized team, spry and mettlesome, yet easily managed and safe, good constitution, a good keeper, good temper and well trained.—F. G., in *Utica Herald*.

Sowing Grass Seeds

We prefer (in answer to several inquiries on our table) to sow grass seed early in the fall, or late in summer, so that the plant may get well established before the ground freezes. If sowed late in the fall, and yet early enough for the seed, to germinate the young plants are more likely to winter-kill and the seed is lost. If the seeding cannot be done early in the fall, wait until February to April. Sown at anytime after February, the seed will germinate early and get a full season's growth.

We recommend the re-seeding of both pastures and meadows. Especially is it important in the case of meadows where the practice is to cut the crop while in bloom or before the seed drops; and especially if it is in the main a Timothy meadow. For Timothy is a biennial grass and will "run out" in two years if not renewed by re-seeding—hence the remark common among farmers that the red clover runs the Timothy out. This rule also applies to closely fed pastures. The constant cropping with only the tough, wiry, wild grasses which the stock will not eat, going to seed, soon runs out the better sorts, unless seed is sown more frequently than it is. Harrow over the old pastures and give them a re-seeding with white clover, orchard grass, Timothy, redtop, etc, once in two or three years, and increased forage will repay the trouble.

Lands that are overflowed in the fall and winter, and are liable to be washed badly

by such overflow, whether pasture or meadow, are better for frequent re-seeding. Indeed, it is essential if the tame grasses are to be kept in them at all; otherwise the coarse, innutritious marsh grasses will surely succeed them. On such lands the seeds should be sown as soon as the water has subsided from them in spring.—*Rural New Yorker*.

Making an Osage Orange Hedge.

G. E. McCharry, who has been engaged in hedge making since he was big enough to set out a plant, gives the following directions in the *Cincinnati Gazette*:—Prepare the ground, as you would for a row of corn, by deep plowing, as soon as the ground will do to work in the spring. Set the plants four or five inches apart. Be careful to pack around them hard. It should be pounded down with a maul, if the ground is dry. Here is where the secret lies in hedging—be sure and get a good stand. This pounding down secures this by keeping the air out. The best stand in these parts is one where this pounding process was resorted to. Tend a hedge as you would a row of corn, only a little better. Let it grow for three years without any cutting. Keep all stock away from it, as they injure it. Cattle and sheep will eat the young leaves as fast as they grow; and hogs will root about and do much harm. The third year, cut it close to the ground (in the spring), and it will shoot up very thickly. Then, the next year, in June or July, cut off to the proper height for a fence, and trim the sides so as to leave the hedge about eighteen inches wide. Now if you have a good stand (I mean by that a plant every four or five inches), you have a fence that will turn anything, and I warrant to "neither rip, ravel, or wear out." You must trim it every June or July; July is the best month for trimming. Don't let it get over four feet high, or more than eighteen inches wide. We have tried the laying down process, and find it will not do. It is self-evident to a yone that a tree will not grow when it is cut over half off and bent nearly flat. The only way to do at all is to cut it half off and bend to an angle of forty-five deg; any lower than that, it will die out in a few years.

Forest Tree Culture

At the late National Agricultural Congress held at St. Louis, the committee on forest tree culture presented the following resolutions. The people of the West begin to realize the varied advantages of timber, and to move in the great work of production:

1. *Resolved*, That we recommend farmers throughout the United States to plant with trees their hilly or other waste lands, and at least ten per cent. of their farms with trees in such a manner as to provide shelter belts of clumps and rapid growing and useful timber.

2. *Resolved*, That we solicit the Legislature of theseveral States to pass laws providing bounties for planting useful trees, encouraging the planting of the highway, and for the provision of State nurseries of young timber trees, and also by the appointment of an Arbor Day for the annual planting of trees, as has already been done in the State of Nebraska.

3. *Resolved*, That we ask our Congress of the United States, to require so far as practicable, that hereafter railroad companies and settlers receiving the benefit of the homestead and other acts donating lands shall plant with timber trees one tenth of the land so donated.

Cheap Stump Puller.

How to construct a cheap stump puller, and what can be done with it, is thus told by a correspondent of the *Ohio Farmer*:

Have a chain made of the best round charcoal iron, at least one inch and a fourth in diameter and eight feet long, with a ring in each end two inches and a half in diameter; one side of these rings must be formed like a link. Attach one ring to a band of iron two and a half inches broad, one inch thick, and one foot in diameter, with a small offset for the ring to lodge in. This band should be bevelled on the inside edge, to make it slip on the pile readily, and prevent cutting it. Cut a wire, straight, tapering handle, white oak or locust lever, one foot in diameter at the butt, and twenty-five feet long. Take off the bark and lumps smoothly, put on the band, let it come within two feet of the large end, at which point put in two small pins of iron, to prevent it from going any further. Within four inches of the small end, put on a common ox yoke clevis, with a ring in it to pull by. Hitch on two yoke of oxen. Drive on the right of the stump until the band passes the stump a few inches. Pass the chain round the stump, on the left side, and draw it tight, with no twist in the chain. A little above the lever drive in a common wedge, and put the ring on the wedge. Then go round in a circle, until the stump is twisted out.

This machine will take out about half the dead stumps, in a field of long standing, without cutting the brace roots. Common sized green stumps can be taken out also by cutting the brace roots first, and digging a little. After everything is ready, with the team and two hands it can take up 100 or more stumps per day as it is no draft at all on the cattle, except the labour of pulling the lever from stump to stump.

Rapid Growth of the Chestnut.

"Daily Rural Life," in *Rural New Yorker*, thus relates the growth of a chestnut seedling, found near the line of a fence:

Seven years ago, while taking down the old rail fence in front of my place, preparatory to erecting a new board one I found several small chestnut seedlings among the shrubs, briars, and weeds which the former owner had allowed to grow by the roadside, in the tree shuffle-farmer style. The road being quite narrow, I placed the new fence three to four feet inside of the old one, and wherever a promising tree or sprout occurred in the proper place, it was preserved for a shade tree.

One little chestnut tree, not more than five or six feet high, I noticed in particular, because it had been twisted or grown in naturally among the rails, and was very crooked, but, as it stood in the exact place where a shade tree would be desirable, I carefully disentangled the stem and remarked to my workmen that it would yet be a handsome tree. I have just measured that tree, and it is twenty eight feet high, stem at the base thirty inches in circumference, and at six feet from the ground, twenty inches. The stem is as straight as a reed, except a slight crook near the ground. Last season it produced a few nuts, and this year the ends of the branches bend with their loads of large clusters. This tree has received no care, except pruning, the soil about its roots being covered with a tough sod. Other trees upon my place have made equally as good growth, and I only mention this one for the purpose of showing what might be accomplished in a few years, if a man will only make a beginning.

Alfalfa, or Lucerne.

A correspondent (J. H., St. Louis), encloses us the following slip cut from a California paper, with the remark, "I recommended this plant for the South years ago, and see no reason why it will not do as well there as in California."

There is a want of variety in the flatlands; dried up fields in their sear and yellow appearance make traveling too monotonous for pleasure, and but a slight relief to the eye is the occasional patch of living green. We stopped to make inquiry at one of these oases in the desert, from the party who was engaged in mowing, and from him we learned that he was then taking off the fourth crop this season; that he sowed the seed last year and got a double crop, and this season, the roots having reached moisture, after this fourth mowing he intended turning his cows in and expected to keep them in good order off that patch during the winter. Why this available article of feed for cattle is not more extensively cultivated seems unaccountable; cattle thrive well upon it, cows give more and richer milk than on ordinary grazing pasture land; there is no need of plowing, sowing and harrowing, year after year, as for other crops; the Alfalfa, once rooted wants no farming implements near it for many years; cattle cannot destroy the roots, and last of all, its rapid growth should commend it to ranchmen, who are so ready to grumble over short crops and poor times.

Potatoes for Seed.

The following are the ideas of an old farmer in Maine on seed potatoes, as given in the Lewiston Journal—

We use too ripe seed when we propagate from tubers that have lain in the ground till dead ripe. Plants that are propagated by tubers require different treatment from those propagated by seeds. Our corn and grains that we use for seed we like to have stand a little longer than the main crop, and become perfectly matured. On the same principle our corn is selected from the ripest, best developed ears and kept so. But potatoes for seed should be dug and placed in a cool, dark cellar, just as soon as a majority of them will slightly crack open in boiling. This is most invariably while the tops are yet green and growing fast. The tubers are then in their most vigorous state. Discontinue them from the parent stalk at that time and they retain their vigour. Instead of deteriorating, as most of us know the older sorts here, their vitality is increased, and they will better resist with less tendency to rot. As far as I know, and subsequently, observations led him to make some experiments to test the theory, and he finds it the proper course to pursue. It is not often said that the late planted potatoes are better for seed than those planted early? The lateness of their planting, presumably, prevents perfect ripeness, hence the principle of the above reasoning would be in force

Planting Acorns.

Acorns should be planted as soon as they fall from the trees in autumn. In planting, it is best to cover them but very slightly at first—a half inch of soil is enough; and then add another half inch or more just before the ground freezes. A very good plan is as follows:

Open shallow trenches five or six inches wide and three deep, and into them scatter

the acorns as soon as gathered, scattering at the same time soil among them, only partially covering; in a week or two sprouts will issue and descend into the earth, just as they are found in the forest at the present time (Oct. 21). A little later, or before the ground freezes up for winter, fill up the trench either with leaves, straw, or light, friable soil.

If the nuts are covered deeply in heavy, compact soil when they first fall from the trees, they will sometimes mould and decay before cold weather, and consequently fail to grow the following spring.—*New York Sun.*

Hybridizing of Wheat

The Commissioner of Agriculture at Washington says on this subject, in the report for October, 1872,—“By my direction, Dr. Vasey, with the aid of Prof. Taylor, of this department, made a dissection and microscopic examination of two and twenty flowers of wheat in different stages as they approached maturity. Watching the progress of this examination, because I deemed the subject as interesting as it is important, I am strongly impressed with the belief that wheat is a result of close fertilization, and that cross breeding in this plant never occurs but by artificial means.”

What say our experimenters in this matter? Mr. Arnold and Mr. Read have been for some time engaged upon the cross-breeding of wheat, and should now be able to throw some light upon this interesting question.

The Ash-Leaf Maple.—(*Acer Negundo*)

Dr. Vasey, in the Monthly Report of the U. S. Department of Agriculture, says that this tree is deserving of particular attention, combining not only the qualities of rapid growth, of extreme hardiness, of handsome foliage, and a good quality of wood, but having also great promise as a sugar-producing tree. The sugar made from it is not equal to that made from the hard maple, but is yet of excellent quality. A committee of the Illinois Hort. Society reported, that it produces more sap than the sugar maple of equal size, a tree five years old and three and a half inches in diameter, producing half a gallon per day, the sap is richer in sugar, the yield of dry sugar averaging two and eight tenths per cent. of the weight of the sap, and the sugar is in general whiter than that from the sugar maple treated in the same way.

The Hemlock.—*Abies Canadensis.*

Thos. Meahan says that it would be no exaggeration to pronounce this the most beautiful evergreen in cultivation, and in truth there is not another which will endure our Canadian climate that can compare with it. In form it is most graceful, its spray-like branches droop in beautiful curves, and its light green leaves have a silvery sheen when the tree is swayed by the winds. Why do not our gentlemen plant it more frequently? Is it neglected because it is a Canadian tree, a true child of the north, able to face the cold and the storm? We often are at great pains to purchase and plant foreign trees in our lawns and parks that are not half so beautiful as our own Canadian hemlock.

The Maples.

Monthly Report of the U. S. Department of Agriculture.

For ornamental culture, for usefulness of wood, and for vigour of growth, there are few trees so worthy of attention as the Silver-leafed Maple and the Red or Swamp Maples. The silver leafed is largely planted as a shade tree in cities. The Red Maple is more compact and somewhat less rapid in its growth, but is deserving of large planting. For beauty of form, for its close and compact foliage, for the value of its wood and of its saccharine juice, no cultivator should neglect the sugar maple. In the whole family of maples, whether native or foreign, this species is without a peer. It is a little shy of transplanting, and for the first few years is of slow growth; but when it is established it is worth many times its cost.

Curing Clover Hay with Straw.

The following article I find in my scrap book from a correspondent of the *Journal of the Farm*—

I am now feeding clover hay put into the mow last summer about half cured. About one foot thick of clover spread evenly over the mow, then the same amount of straw; again clover alternating with straw. Putting several loads in this manner, it comes nearly as green as fresh cut grass or clover, perfectly free from dust or smoke. All stock eat it with great avidity, milch cows doing splendidly upon it, eating the straw nearly as well as the clover. I think juices of the clover are to a certain extent absorbed by the straw, making the straw nearly as good as the clover, and preventing the latter from heating, and preserving its colour and sweetness.

The Red-Leafed Colchian Maple.

(From the *Gardener's Monthly*.)

Who can look on a perfect specimen of this new maple and not fall in love with it? I confess, I cannot. I procured a specimen several years ago, and now as it is covered with its dark-green glossy foliage, and the young growth tipped with pretty red tints, it grows on my lawn, and I hope soon they will be so plentiful that many others will look on its beauty and admire as I often do. It is thirty here, (Long Island, near New York City), and, although young trees were partially killed, who can blame them when the sycamore maple so freely departed this life and the sturdy Norway (spruce) scarcely withstood the frost king's severe approaches.

Plant Trees.

Every citizen who has no trees about his residence, should see to it, and plant shade trees about his place. To estimate the value of groves and shelter belts in this country, would be as difficult as to estimate the value of good health in dollars and cents; no man knows how to appreciate them until, having enjoyed either one or the other, he is deprived of its blessing. The benefit to be derived from a grove in summer is that of shade and protection from flies, while the belt of timber, if properly arranged, will protect the orchard and farm from the devastation of the storms of winter; they will both furnish protection to man and beast from the chilling winds, and add fifty per cent. to the value of the place.—*Davenport Democrat.*

Stock Department.

Pure or Mixed Pedigrees?

From the *Scottish Farmer*.

Mr John Downing, of Ashfield, Fermoy, Co. Cork, has lately issued a catalogue of his herd. The herd is full of Booth blood, and comprises several animals of note, which must have cost Mr Downing much trouble, time, and expense to collect. The fact of his having purchased a good many of the best animals which were disposed of at the Westland (Mr Barnes') and the Castlogrove (Mr Grove's) sales last year, fully shows that he went to the proper quarters to lay down the foundation of a first-class herd of shorthorns.

But it is not with his herd we purpose to deal in the present instance, but with the preparatory remarks he prefixes to his catalogue. Mr Downing ventures to state what most of the modern school of Shorthorn breeders must regard as rank heresy, when he "goes in" for "the occasional introduction of fresh blood in a diluted form into closely bred stocks," plainly showing that he does not pin his faith to the accepted dogma of shorthorn breeders which is simply "pure Booth or pure Bates;" and in support of his theory Mr Downing argues as follows.—

"That principle was acted upon by all great breeders of Shorthorns.

The Messrs Colling, and later on Mr Mason, Earl Spencer, and Sir Charles Knightley, all used bulls which possessed blood new to their herds. The Messrs Booth used Albion 14 and Pilot 496 of Colling blood, and it was the cross of Mussulman 4525 of the Cherry tribe on Bracelet, adopted by Mr John Booth, that gave to the Killerby herd the celebrated Buckingham 3239, who ranks among the greatest Booth sires.

Mason blood was also introduced to the Booth stocks through Matchem 2261, whose sons Young Matchem 2282, bred at Killroy, and Young Matchem 4422, called at Warlaby, were considerably used, and whose daughter Maiden bred the renowned Mantani. Again, it was Rane's Lord Lieutenant 4260 which got Leonard 4210, a famous bull, whose son Fitz-Leonard 7010 was the sire of Crown Prince 10087, one of the most successful getters bred at Warlaby. It is also worthy of note that the dam of Crown Prince was by Buckingham 3239. Lord Stanley, 4269, too (bred by the Earl of Carlisle and, although of the Isabella family, crossed with other blood), was used at Killerby, and to him must be accredited the great Royal and Yorkshire winners, Birthday, Ladythorn, Modish, and Alba.

The cross of Exquisite 8043 is not as successful as others, because (as Mr William Sanday stated at Newark) "Lord Spencer's stock, though neat in form, were wanting in flesh and robustness," and further, the blood was infused too raw into the Booth herds (Mr Carr's History, page 51).

All other valuable Shorthorn families, as well as those of the Booth sort, have had fresh blood introduced from time to time. Mr Bates crossed his Duchesses with Belvidere 176, also with Cleveland Lad 3497 and Cleveland Lad 2nd 3498. It was the cross of Belvidere repeated that produced Duke of Northumberland 1940, one of the best bulls ever seen. Many of the Duchesses, too, have the cross of Norfolk 2377 and the cross of Usurer 9763 in their pedigrees.

The Grand Duchesses derive some of their blood from Booth sources through Prince Imperial 15095 and Grand Duke 3rd 16182;

some also from the Cherry tribe; while the Oxfords have, almost all, the crosses of either Priam 18507, Earl of Warwick 11412. The Lord of Eryholme 12205, Romeo 13619, Marquis of Carrabas 11789, Seventh Duke of Airdrie 2378, or Lamartine 11662; and in many of the Oxford pedigrees two such crosses occur.

The present fashion does not, however, accord with the views and practice of the great breeders of former years, because it imperatively demands that animals shall be pure Booth or pure Bates in order to fetch very long prices.

The breeders of this day are, therefore, unable (unless possessed of considerable courage) to avail themselves to any great extent of their own judgment in selecting sires to improve their stocks.

This principle of selection, though its necessity is more than ever admitted and insisted upon by Darwin and other celebrated naturalists, is now practically almost ignored, because the number of animals—pure Booth or pure Bates—from which breeders or the respective strains can select, consistently with obeying the fashion, is necessarily limited. That number is still further circumscribed by reason of many such animals being of inferior shape and delicate constitution, and also by the large amount of infecundity which has been generated in many famous strains of cattle by long continued in and in breeding and forcing for exhibition.

Mr William Sanday, formerly of Holme Pirrepoint, whose experience and skill as a breeder are notorious, spoke upon this subject last autumn at Newark as follows:—"My own opinion is that the animals bred in the present day are inferior both in size and in quality to those bred twenty or thirty years ago. Now if this be the case surely there must be something wrong in the present system of breeding. It is evident that but little common sense can have been brought to bear upon the subject. I am convinced that the cause of this deterioration is the principle on which most herds are raised, namely, the fashion—or rather infatuation—of collecting from certain families without any regard to the qualifications necessary for producing and perpetuating good animals. To follow out this plan, in-breeding must to a great extent be resorted to, and the number of families on which such an experiment can be tried with the smallest chance of success is so limited, that, in the majority of cases, the consequences cannot fail to be ruinous. We all know the difficulty of raising and keeping up a good herd or flock. This can only be done by breeding from the very best males and females, but the present system seems to set his rule completely at defiance, if the animal be only of the fashionable strain, it is sure to make a fabulous price whatever its quality."

Now, while we do not pretend to say that there are any better sires than a first-class pure Booth or Bates, still we are of opinion that there is much truth in what Mr Downing states, because there can be no manner of doubt that first-class animals of either of the families alluded to are becoming scarcer, and several of the best judges of shorthorns are beginning to think that the shorthorns of this day could not compare with those of a quarter of a century hence, fully bearing out the remarks of the great breeder, who said, "There are several men fit to be prime ministers, but very few indeed fit to be shorthorn breeders." "Mixers" no doubt have often been "spoil-s," but in the hands of such parties a closely bred herd would be just as likely to spoil. The mixtures which produced the Towneley Butterflies, Soubador or Bolivar, could not indeed be well despised,

neither could the Grand Dukes or Grand Duchesses of the late Mr Bolden. The truth is, although in-breeding was closely practised by the early breeders, still such physiologists were they that as soon as they found the least symptom of deterioration in their stocks, they unhesitatingly procured the sires from other stocks calculated to restore the balance of symmetry. There can be no doubt but that the practice of modern breeders differs very much from that of the great founders of the breed. The modern breed from pedigree, the ancients, if we may so call them, from independent selection. There is therefore much room for thought in those few remarks of Mr Downing's, which it would be well for shorthorn breeders to consider and inwardly digest.

One Way of Looking at it.

But, aside from all other considerations, we are persuaded that if Short-horn breeders wish to stop short with the breed where it is, wish it to go back on their hands, wish to lessen the profits of their business and find themselves superseded in public favour by the breeders of another race of cattle, they will permit the least enterprising among them to induce them to abandon the high feeding system, and adopt the low feeding system. There is not a herd of Short-horns to day, of any celebrity, which is not under the system we favour; there is not a breeder to-day who does not take prizes and make money in proportion, as he practices the so called forcing system in the care of his herd, the show animals in every herd are oftener descended from ancestors, which themselves have been show animals in high condition from infancy, generation after generation, than from any other. If it were even true that an occasional Short-horn bull or cow becomes barren from overfeeding and the consequent accumulation of fat obstructing the healthy action of the reproductive organs, what matters it? Possibly, some breeder fails to permit a favourite animal to take exercise to the extent necessary to maintain its perfect health, but close confinement is no part of the forcing system. So some low feeder starves a favourite animal into "murain," "hollow horn" or "wolf-in-the-tail" but starvation is no part of the low-feeding system. Such isolated and rare cases prove nothing. It is, perhaps, pertinent to inquire why the breeders of swine are not troubled about the forcing system? Their show pigs may even require billets of wood under their heads, to ward off apoplexy when lying down, as was the case at an English exhibition last year, and yet no harm comes of it to the breed, and no one objects to the stock from such a family. We do not observe that the late National Convention of Swine Breeders even discussed the question of feeding with any view to the pretended fatal effect of too much fat. That phantom seems to haunt only the imaginations of a few Short-horn breeders who may or may not get the better of their fears as time passes and their apprehensions fail to be realized. In the meantime the best feeders will go on as they always have gone on, outstripping their conservative or less enterprising or less painstaking competitors in everything that indicates success—the improvement of the breed, reputation for judgment and skill in breeding, prize taking at fairs, high prices at their sales, and balances on the right side of their ledgers.—*Prairie Farmer*.

ANOTHER WAY OF LOOKING AT IT.

There is nothing, perhaps that has tended to discourage the improvement of our native stock more than the blanketed and delicate

specimens of Short Horns at our Fairs—interbred, in many instances, to the ruin of their constitutions, incapable of breeding, and bloated with fat. The farmer buys such a bull perhaps, takes him home, and under ordinary keeping he becomes a "rack-of-bones," a sorry object indeed, and in disgust disclaims against all thoroughness. These pampered animals should not be taken as a type of the farmer's cattle. They are *made* on purpose to take premiums, when they become so overloaded with fat that they are practically useless for breeding purposes. They inherit weak constitutions from their sires and dams, many of whom are so degenerated that they can hardly transmit life to their progeny. These fashionable strains have virtually driven from our Fairs the more robust animals we used to see; have brought the stock into contempt with our farmers. They are used to win premiums before hypercritical judges at our Fairs.

There are, however, plenty of good herds yet, where the farmer can get animals at fair prices, with which to improve his stock; and the improvement of the native stock of the West is one of the great needs of the present farmer.—*Western Rural*.

AND ANOTHER

We have often warned breeders against the danger of overfeeding animals for show purposes, and although the evil is not so great now as it was some years ago, it still exists to a very detrimental extent. Instances of the mistaken policy of putting a gloss on in order to secure a prize, will be found in a report of the Highland and Agricultural Society's meeting—several animals—show horns, polled Angus, Galloway heifers, and mares, having failed to satisfy the condition of productiveness, have been disqualified, and others placed at the Kelso show lower in the scale have been advanced a stage. We wish breeders and judges could be brought to recognize thoroughly the merits of animals not unduly forced.—*Scottish Farmer*.

Regulations as to Show Cattle.

The New York State Agricultural Society act under the following rules and conditions, and all Agricultural Societies should adopt like rules. There is no honesty in showing animals that are not regular breeders. No man can compete against barren animals, always at rest—always fat—with animals that are breeding with regularity, and subjected to the drain consequent upon this. The muscles are plump in the one, and the whole contour of the body is symmetrical, while a regular producer, infinitely the superior of the other in every way, cannot go into the show ring as a competitor, under the judgment of such men as are generally placed upon committees on thoroughbreds, with any prospect of success. This will apply as a rule to all localities, except such as have long been the home of thoroughbred cattle, hence furnishing plenty of men of ability and character, who can be called on to act on these classes:—

"In order to discourage the overfeeding of breeding animals for exhibition (a practice which not only causes useless expense and loss to the owners, but sometimes deters those breeders from exhibiting who wisely refuse to incur the risk of putting their animals in what is called "show condition,") the judges are instructed to make allowance, in all cases, for difference in condition, and are cautioned against being deceived thereby.

And whenever there shall seem to the judges to be reason to doubt whether any animal receiving an award is actually in breeding condition, they shall state the doubt explicitly in connection with the award. In every such case, the prize shall be held in suspense, and shall pass to the animal next in order on the prize list, whose prize shall in like manner pass to the next, and so on down the list, unless proof be furnished to the Executive Committee, that the animal, if a bull, has got cows with calves within two months, or, if a cow or heifer over two years old, has produced a living calf within nine months of the fair; and in all cases to which this rule applies, the judges, besides awarding the prizes, shall, if there be any other animal of sufficient merit for a prize, designate one animal as the reserve number to succeed to the place made vacant on the prize list in case any of the prize animals shall be disqualified as above provided.

"The fat cattle must be weighed, and in general those are to be judged best which have the greatest weight with the least surface and offal.

Improvement of Stock

From the Western Rural.

At a recent discussion on stock breeding in Scotland the following points were argued as essential to the improvement of stock: 1st, pure blood; 2d, high strain of blood; 3d, a sound constitution, free from hereditary diseases; 4th, substance, symmetry and quality; 5th, a docile temper. One of the speakers gave the following good advice, since, as he said, it is most important for any farmer that he should proceed as rapidly and at as little outlay as possible:

"As it is the generally recognized maxim that the exterior form partakes more of the conformation of the sire than of the dam, and as one sire will, to some extent, improve the whole of each year's stock, while a female gives but one superior beast, I would say, procure superior males, at whatever cost; and should they be too expensive for the size of the farm, let two or three farmers join in the purchase, and keep one animal."

This embodies all that is necessary for the farmer in the breeding of stock. In Great Britain the selection of sires is much easier than in the United States, for the reason that there is not only more pure blooded stock to select from, at reasonable prices, but also more stock especially adapted to the use of the ordinary farmer.

Among our great stockbreeders the specialty would seem to be the feeding of stock, with a view to take premiums at fairs. As a consequence, this class of Short-Horns is coming more and more into disrepute with farmers each year, and principally from the fact that they see at fairs only such animals as have been pampered with the most stimulating food, and loaded down with blankets, to make them show.

High feeding and the best of care is necessary to develop any animal to a proper degree, but for the ordinary farmer, development only to the point combining full feeding with good ordinary care, is required. Such a class of staunch, hearty, purebred cattle ought to find ready sale, and will, as soon as our well-to-do farmers can find them at reasonable prices, say from \$150 to \$300 each for one year old bulls.

There are some breeders who have pursued this course, but not many. The great necessity in the West is a class of bulls not too good for everyday farm use. Who will first give them to us?

Value of a Thorough-bred.

The thorough-bred pig, in starting a herd, is chiefly valuable in breeding to common stock. By using a thorough-bred boar upon common sows, you get a half blood that does very well for feeding purposes, which can be further improved by selecting the best sow pigs, feeding them liberally, and again getting a thorough-bred boar and using on them, which, if practiced a few years, will produce porkers equal to the pure blood. But grade or impure males should never be used, as the tendency is to run back to the scrub. The thorough-bred, if purchased young, can be had for \$25 to \$30 each. He can be used one season, and sold, or castrated and fed, when he will of himself almost or quite pay for his original cost.

At first thought, to many the price for a pure blooded pig may seem high; but, really, it is better to pay the price than let your sows go to a scrub for nothing. Say you pay \$25 for a boar and breed twenty sows. They will raise, say one hundred pigs (which is a low estimate). The pigs then cost you twenty-five cents apiece; and will make hogs that will weigh at fattening one hundred to two hundred and fifty pounds more than scrubs, (which grade pigs will do), on the same feed. You have, therefore, an increase in value of from \$300 to \$700 in one year, with price of pork at \$3.00 per hundred, and you have your boar left. Can you invest money at a larger per cent.? And the lower the price of pork, the more important that you do not squander your feed and time in raising and feeding "Hazel-Splitters."

It is not expected that every man, or every farmer can, or that he could afford to raise thorough-breds for feeding into porkers, as it requires great outlay of money and a long time to collect or obtain a herd of pure bloods.

In this day of improvement, the enterprising farmer will not be content to raise the old "sun-fish," "razor-backed," long nosed "hazel-splitter." Progress and enterprise is a characteristic of the true, intelligent American farmer, and he who will not push forward, will be left far behind.—*Sheppard & Alexander's Manual*.

Feeding and Fattening Animals.

Three fixes thirteen pounds as the quantity of hay per day which a cow requires for her maintenance in perfect condition; and if in milk, he allows as many as twenty-two to thirty-three pounds, but the ration must vary with the weight of the animal. Mr. Perrault, another foreign writer, states twenty-seven pounds as the allowance for a milk cow weighing about 800 pounds, he having in his experience found that an animal in milk required about six and one-quarter pounds of hay for every 220 pounds of living weight. A very large ox or cow, relatively to its weight, requires less food than an animal of smaller dimensions. And this circumstance is a grand argument with those breeders who are in favour of very large cattle. They say that if a large ox consumes more than a small one, still the increase in consumption is by no means in the ratio of the increase of weight. The real difference is owing to the quieter disposition of the animal, the vessels going to support the flesh or fat being larger, attained by the before mentioned careful crossing, so that some breeds have, by such a system, attained the faculty of laying more upon their backs, and others again more in the adipose tissues within. It may be said that, for every one hundred pounds, neat cattle require for plain keeping

three-fourths of a pound of meadow hay; when labouring two pounds; when in milk, three; growing rapidly, three and one-half, which ought to be given with great regularity, and about three times a day, constituting many meals, which, however, are well divided, the whole quantity for each meal not being placed before the animal at once. This precaution is particularly necessary when the allowance consists of green fodder. In fattening cattle it is perhaps of more importance than in general feeding, that the provender should be distributed regularly, plenty of soft litter and the great attention to cleanliness aid materially in fattening.

Hay Uncut, Cut and Chaffed.

It is stated in some of the agricultural papers that twenty-five pounds of hay uncut, 19 pounds cut in pieces an inch long, or thirteen pounds chaffed, are equal in value as food for stock. If this statement is correct, farmers might make a great saving by reducing it to a cut or chaffed condition. Of course, it is not argued that its altered mechanical condition makes it more nutritious, but simply reduces it to a state from which the animal can make available a larger portion of the nutriment it contains. Food reduced to a high degree of fineness is more thoroughly mixed with saliva in chewing, and in undergoing digestion, the gastric juice comes in more immediate contact with it; under these conditions the food is much better digested, and a larger part of its nutritive value appropriated to the want of the system, than when it is taken in an unreduced state. Oats or corn fed whole often pass through the stomach and bowels of animals half digested, and no doubt the same is true of hay. When horses are required to labour, a peck of unground oats or corn, or ten pounds of hay not very well masticated, will not yield to their wants more than two-thirds that amount finely ground. The latter could be thoroughly digested while the animal is at work if the former could not. The saving of time required to eat it would also give them more rest. Animals not required to labour, having sufficient time to eat and digest their food, would get more nourishment from the same amount than those that worked. It is not clear, however, that the increased value is just that indicated at the head of this article. We need quite accurate experiments to determine this. It is only clear that reducing food to a fine condition, by cutting, chaffing and grinding, greatly increases its value.—*Ohio Farmer.*

Watering Sheep.

"Many persons are under the impression, that it is wholly or quite unnecessary to water sheep more than once a day in winter and not at all in summer, when on pasture. There could not be a greater fallacy. It is true, that sheep and also horses will manage to live, and even do tolerably well in dry pastures in summer, by feeding exclusively at night. But careful observation will show that, if allowed, water will always be taken in small quantities, and usually at regular intervals, and this with advantage to themselves and profit to their owners. There can be no more vicious practice than that of watering but once a day, as many otherwise good farmers do.

It has been pretty well demonstrated that a large amount of water taken at any one time is detrimental to health, and especially to fattening animals, as producing an unnecessary amount of carbonic acid. Be-

sides, in winter, sheep as well as other animals, when they are watered regularly, will take so much that it chills them; or, if very cold, will not drink at all. But if allowed freedom to drink at will, they will consume only just enough, and that at regular intervals. Therefore free access to water, both summer and winter, or watering regularly, not less than twice a day, ought to be regarded as indispensable by every stockmaster. If there is a shepherd who is not aware of the difference there will be in the condition of sheep that have, and of those that have not, been thus watered during a winter, he has but to try it to be convinced."

How to Manage a Bull.

The National Live Stock Journal says: No animal is exercised more important than the breeding bull; and it is, we believe, the judgment of a large majority of breeders that the frequent instances of inefficiency in high bred animals are caused by high condition and illness. We know that many instances may be cited of bulls kept in-doors summer and winter, and in the highest condition, that have been sure breeders; but these are exceptions to the general rule, and should not be relied upon as examples. We endeavour to have our bulls in pasture day and night in May and June and in the fall months. In hot weather they are kept in through the day. When in pasture we usually allow a few cows in calf to run with them. With this management a bull will be vigorous, efficient and healthy, and much more liable to be quiet than when constantly confined in a stable. Some breeders fence in a field of five or six acres for a bull lot, in which they have a shed and water, and where they keep a breeding bull summer and winter. This is a very excellent plan, and with a strong post and rail fence, if the bull is never allowed to be taken out, he will sometimes behave himself quietly there for five or six years. In the winter bulls are generally kept in stables, but should always be taken out daily for exercise, if only a few rods to water, it will be a great help.

Charcoal for Sick Cattle.

The following is copied from the *Country Gentleman*: Nearly all animals become sick from improper eating. In nine cases out of ten the digestion is wrong. Charcoal is the most efficient and rapid corrective. It will cure a majority of cases, if properly administered.—An example of its use;—The hired man came in with the intelligence that one of his finest cows was very sick, and a kind neighbour proposed the usual drugs and poisons. The owner being ill, and unable to examine the cow, concluded that the trouble came from over eating, and ordered a teacup of pulverised charcoal given in water. It was mixed, placed in a junk bottle, the head held upward, and the water, with its charcoal, poured downward. In five minutes an improvement was visible, and in a few hours the animal was in the pasture, quietly eating grass. Another instance of equal success occurred with a young heifer which became badly bloated by eating green apples after a hard wind. The bloat was so severe that the sides were almost as hard as a barrel. The old remedy, saleratus, was tried for the purpose of correcting the acidity; but the attempt to put it down always caused coughing and it did little good. Half a teacupful of powdered charcoal was next given. In six hours all appearance of the bloat had gone, and the heifer was well.

Profits of Soiling.

Mr H. Seligson, of Cornwall, Connecticut, stated at the farmers' meeting at Lowell, Mass., that farmers in his neighbourhood were engaged in producing milk for the New York market. Referring to the short feed of the fall of 1871, he added:

"Our farmers all declare they will not go back to the old way of feeding stock. We cut up our straw and everything available.— Many of us have adopted the plan of steaming the food for our cattle, and we are satisfied from the experiments we have made that we save a third of our provender by steaming it. As a sample of what this manner of feeding stock will do, I will relate an instance of a young man, who, a year ago this spring, bought a farm of eighty acres of land for \$11,000. The farm then kept 11 cows, four or five yearlings, and a horse or two. The young man took hold of that farm and immediately put in 14 acres of sowed corn. He increased the stock to 25 cows, kept them on 12 acres, feeding them the sowed corn, and also cutting his oats green for food. His receipts the first year were over \$3,000. This year he has summered on that same farm 27 cows, and he told me the other day that his 27 cows would average him \$100 each from the profit on milk."

Bulls.

A bull calf intended to be kept for service should get a full allowance of new milk daily for at least four months, along with cake. The object throughout in regulating the feeding, should be to keep him in vigorous health, but carefully avoiding that "show condition" which some think requisite in bringing up young bulls. Bean meal, cake, and crushed oats, along with grass or hay, and roots, is the best diet. During the first year, young bulls should be ringed, and accustomed to be led about. Unless under special circumstances, a bull should be allowed to pasture with the cows, but when it is necessary to keep him confined to the house he should get walking exercise for at least two hours every day. Attention must be paid to the feet of bulls kept in the house, as the hoofs are apt to grow too much, and inconvenience him in walking. Bulls which are constantly confined are apt to become vicious; but much depends upon his keeper. Any keeper who systematically maltreats a bull, or appears timid in going about him, should be changed at once.—*Scottish Farmer.*

Essentials in Improvement of Stock.

At a recent farmers' discussion in Scotland, the following points were taken up, as the leading essentials in securing the improvement of stock: 1st, pure blood; 2d, high strain of blood; 3d, a sound constitution, free of hereditary disease; 4th, substance, symmetry and quality; 5th, a docile temper. One of the speakers gave the following good advice, since, as he said, it is most important for any farmer that he should proceed as rapidly and at as little outlay as possible:

"As it is the generally recognized maxim that the exterior form partakes more of the conformation of the sire than of the dam, and as one sire will, to some extent, improve the whole of each year's stock, while a female gives but one superior beast, I would say procure superior males at whatever cost; and should they be too expensive for the size of the farm, let two or three farmers join in the purchase, and keep one animal."

Feeding Swine.

The *New England Farmer* says:—Feed regularly. Perhaps three times each twenty-four hours is better than twice. When fed only once or twice, they eat two ravenously, and crowd the system so as to impair digestion and make themselves uncomfortable. They will not grow fast, or fat fast while in this condition. Never add fresh food to any that may be left in the trough from a former meal. If worth preserving take it out, work it up with the fresh food, and clean out the trough with cold water and an old broom. This will not seem so painstaking to persons of methodical habits, and is the true course by which to make money on the animal's feed. Add a little salt frequently to the food, and in warm days give them as much pure, cold water as they want.

Water for Sheep.

Joseph Harris says in the *American Agriculturist*:—Pearl, the butcher, was telling me to-day that this spring he bought two lots of grade lambs from two farmers, with the privilege of taking them "when fit." Both lots when he bought them were equally good, and both had good pasture; but one lot had constant access to water, and the other had not. The former grew finely and got fat, and by the middle of August weighed from 60 to 70 pounds each. The latter weighed from 40 to 45 pounds, and were so thin that they could not kill them. It seems passing strange that any one should expect ewes to furnish milk for their lambs during our hot summer weather without water.

Gain in Cattle.

It takes eleven pounds of milk to add one pound of live weight to a calf; and an ox that weighs one thousand three hundred pounds will consume twenty-two pounds of hay in twenty-four hours to keep from losing weight. If he is to fatten, he must have just twice that quantity, when he will gain two pounds a day. This is one pound live weight to eleven pounds good hay. To obtain fifty cents a hundred for his hay, a farmer must sell fat steers at five dollars and fifty cents per hundred pounds.

The *Practical Farmer* says:—"The advantage of cooking food for stock, especially milk cows and young stock, is fast becoming one of the settled questions in agriculture. We hardly know a dairyman who does not pour boiling water over his cut hay and meal or bran, even if he does not cook it by steaming. It is found to economize food, to increase the flow of milk, and promote appetite. Cows will eat much more of cut hay and feed steamed or moistened with boiling water than they will of dry food—and we hold it the true policy of the dairyman to induce his cows to eat as much as possible, as the more they take in by way of food, the more will be given out in the form of milk. To stint cows at all in an ample supply of proper food to keep up nutrition and to promote milk secretion, can only be called 'a penny wise and pound foolish' policy. It will not pay. When roots are also boiled or steamed, the nutritive matter they contain is more developed and the same weight of roots produce larger results, both in the condition of the cow and in her milk secretion."

The Dairy.

Improving Dairy Farms.

There are more than ten million cows in the United States, the money value of whose production does not aggregate more than forty million dollars per annum. Few of these cows pay their owners any profit: the vast bulk of the whole does not pay expenses of feed and labour. This is readily shown when we come to figure up the cost of a year's provision for a cow, and allow a fair margin for the protection of those which really pay a profit over and above the cost of keep and labour of attention, and preparing dairy products for market. This, too, is wholly owing to the gradual depreciation of stock; for it is apparent to any man well acquainted with the general run of our stock, that it is not improving in quality, nor even holding its own. Every succeeding year finds dairy stock increasing, and perforce degenerating; for where no careful selection is made stock will certainly run down. Originally our stock was the produce of the best obtainable European breeds, for we cannot suppose that any but the best was brought by our first settlers from Europe. And now, although much money is being spent in improving our breeding stock, the wave of improvement only ripples here and there, without affecting in the least the wide general level. Now it is far from profitable to keep retrograding stock, and dairy stock cannot stand still: it must be improved or go back. Neither can we afford to permit any further retrogression, or it would be more profitable to put our stock out of existence forthwith. When it is clearly understood, it will be seen how absolutely necessary it is that our dairy stock should be improved. The improvement needs to be begun by getting rid as soon as possible of the worst of it, from which we suffer such a loss as can only be appreciated when we consider how low an average is made by including our very best. All such poor profitless cows should be dried off, and fed for the butcher, and their places supplied by the most promising heifers. A stop, too, must be put to the practice of selling good heifer calves for veal for here is the chief road we have travelled in reaching our present stage. Further, improved bulls must be introduced, either by co-operating farmers or by the efforts of agricultural societies, and their produce carefully improved. In this, and other ways that will readily suggest themselves, can comparatively inexpensive improvements be begun and continued. A taste for improved stock has been created in the general mass of agricultural communities by the efforts of wealthy breeders, but the idea is prevalent among farmers that it is hopeless to attempt to compete with them in raising improved stock, and that men of ordinary means can never hope to possess such animals. But it may be done, and by co-operation and combining small capitals of individuals for their joint benefit. If such efforts are made, and an improvement begun in this respect, a few years need only elapse before our dairy producers will increase annually in value to the extent of hundreds of millions of dollars. An increase of \$10 per annum in the product of each cow would now amount to \$100,000,000.—*New York Tribune.*

Curing Cheese—Chemical Constituents.

The curing process in cheese develops: 1, acetic acid the acid of vinegar; 2, ammonia; 3, a volatile and excessively fetid oil; 4, a white substance called leucin, which is always found among the products of the putrefaction of meat; 5, a gummy substance, soluble in water, having an agreeable taste of juice of meat; 6, several acid substances known to chemists as fatty acids; 7, an oily, yellowish, inodorous, very fluid substance, heavier than water, and so acrid that a drop on the tongue will raise a blister and cause a sensation of burning; this corrosive oil is acid also, and it no doubt is what gives the pungent flavour to the cheese.

The cheese becomes soft because the insoluble casein is partially converted into substances that are soluble, and which do probably dissolve in part of the water which is left in the cheese. The peculiar melting quality of ripe cheese is not due to any important extent to the fat in it, but rather from the soluble substances formed from the casein.

This ripening process is, after all, but another expression for the assimilating process by which the growth and increase of the micrococcus is nourished; growth of any kind, in the vegetable or animal world, must be attended by the assimilation of food, and the organism that needs food must get it from whatever suitable material it can put itself in contact with. In the present case the fungus finds just what it wants in the highly nitrogenous casein around it.

It is from very much the same cause, I fancy, that meat, when kept for some time, is more tender and juicy than when cooked at once, viz: from the increase of micrococcus cells among the fibres of the meat which, just as in cheese, break down its structure somewhat, and, perhaps, elaborate the material that they assimilate into new forms, that give a flavour to the meat that it did not possess before. Thus we have seen that there is a most intimate connection between fermentation and putrefaction, and the art of cheese-making—one more intimate and complicated than is to be found elsewhere—that from the beginning to the end of his work the cheese maker is brought into constant contact with one form or another of these modes of chemical change; that the minute organisms by which they are brought about, are the very hand maids without which he could do nothing—without which his art would not exist at all while they may, on the other hand, cause the ruin of his handiwork unless he keeps them fully under his control; that they are everywhere about him, and, as it were, watching eagerly for any chance to get the advantage of him whenever he may for a moment remit his care and watchfulness—that probably they are the unknown causes of his occasional failures and mishaps, even when he exercises his utmost care and skill—and though utterly speechless and despicably small, they yet say in a voice which he need not misunderstand, that he cannot afford to ignore or despise their power and influence.—*Extract of Address by Prof. Caldwell, Cornell University.*

HOW MUCH HAY FOR A COW.—Augustus Whitman, of Fitchburg, Mass., in an experiment to compare the value of different feeds found that two large cows ate 28 pounds each of good dry hay per day without other feed. Mr. L. E. Scott found that a good sized cow belonging to him averaged 25 pounds of good hay per day. In another case a dairy of cows averaged 25 pounds per day through the winter.

Turnip Flavour in Milk and Butter.

A correspondent of the *American Agriculturist* states that last winter he fed turnips in the usual way at milking time to five cows, until the milk and butter became so strong that it could not be used. He then commenced feeding immediately after milking and found that "there was not a particle of turnip flavour in the milk or butter." After a time the taste returned. On investigation, he found that one of the cows was nearly dry, and was milked only once a day, while she was fed with turnips twice a day. She gave but a pint of milk per day, so that when fed in the morning she could have had only about half a pint of milk in her bag; yet this received so much taste from the turnips that it spoiled the milk of four other cows in full flow. To make the test complete, he had her milked twice a day, when the difficulty at once ceased, and did not recur. Evidently a very small amount of milk in the udder will suffice to do the mischief, and if drying off cows are milked only once a day while on turnip feed, their milk should not be mixed with that from the rest of the herd.

"With the beginning of the year," says a writer, "the farmer should commence keeping an accurate account of his farm. Let a book for that purpose be kept, wherein the daily items of labour and expenditure shall be carefully entered. At the opening of the spring's work, as each crop is committed to the earth, give it an appropriate heading, and transfer to its page in the diary the items of labour, seed, manure, &c., pertaining thereto, and after the harvest of crops, the account can be closed, and exact cost and value of each determined. Every farmer who thus keeps an account with his farm, will be able at the close of the year to ascertain the exact amount made or lost upon each crop or animal. The lessons furnished from this system will prove highly valuable from their reliable and truthful character. The more profitable branches of his farming pursuits, standing boldly out on the record, will incite the farmer to renewed energy in those directions, while the equally prominent entries, revealing from whence his losses arise, will serve as beacons to warn him from the folly of similar experiments." Try the account system for one year, brother farmer; be thorough and systematic in every part, and after becoming acquainted with its advantages, you will never abandon it.

Breeding Cows for the Dairy.

If the great dairymen of the present day would look around and notice the systematic manner in which horsemen are breeding speedy trotters, they might gain knowledge which would be very valuable. To obtain this desideratum they are sparing no pains to mate so as to trace back through none but sires and dams having the blood of particular animals whose characteristics they wish to perpetuate. Doubtless the aptitude to give a large quantity of good milk might be bred into herds of cattle, so that dairying would become the most profitable branch of farming. It may be well to consider how similarly the great Short Horn breeders are proceeding in fixing the capability of transmitting all the beef-producing qualities, and the mellow touch as well as the magnificent frame, and then draw the inference that breeding from bulls descended from none but

deep, rich milkers, would give a corresponding result, viz., a natural inclination to produce a great flow of milk. Then by raising all the heifer calves what a fortune-making herd could be accumulated! A few years since I knew two gentlemen of means who had herds of dairy cows; one had 200 in the far West, and the other about 60 in the East. The former bought cows to fill up as fast as vacancies arose, and raised no calves; the latter reared calves of both sexes, but did not pay any attention to pedigree. The first mentioned, though a very wealthy man, sold entirely out, years ago, and the other is desirous to get rid of his whole agricultural speculation. Now if these proprietors had raised young stock from sires whose pedigrees would be sure to double the milking properties of the cows they started with, they might have been in receipt of handsome returns for their enterprise, instead of bemoaning the loss of many thousands of dollars.

G. C.

Keeping and Marketing Butter

Mr. J. T. Ellsworth, one of the best New England farmers, at a meeting of the Massachusetts State Board of Agriculture last year, being asked to state his mode of packing and transporting the butter which he makes to market, said:

My whole aim is to keep it from the air. I do not want any kind of air to reach it. If it is pure air, it will abstract the sweet flavour; if it is bad air it will do harm, of course. I cover it from the air from the time it is salted until it is worked. Then it is boxed as soon as it can be, and covered. I have three different sizes of boxes. My shipping box is something like an old-fashioned tool chest, and holds four boxes of thirty pounds each. The shipping box is two boxes high and two boxes wide. They are the common round butter boxes, but the shipping box is a square box, with handles at each end. A rod comes up at each end, and there is a thumb-screw outside on the cover. Listing, such as comes on the sides of cloth, is tacked around the edge of the box. When the cover is screwed down, the box is pretty tight. You will see that there is a vacant space between the two boxes, something like a three-square. I had two galvanized iron boxes made, three square, or nearly so, that just fit into that cavity, and these were filled with broken ice, about the size of a hen's egg. These boxes are filled with ice, the butter put in, and the cover screwed down tight, in time to meet the express train, and my butter gets to the stall at half-past eleven, A. M. Two-thirds of the ice is in the boxes, and the butter, I have been told, is apparently as hard as when it started.

Wintering Cows.

An ordinary-sized cow will eat about 200 lbs. of hay per week. In the dairy districts of this State it is estimated that it requires two tons of hay to winter a cow. Where hay is worth \$20 per ton at the barn, as it is where we reside, the expense of wintering a herd of cows takes a large slice out of the profits of the dairy. But with us, while hay is comparatively high, grain is cheap, and corn, stalks and straw abundant and of good average quality. Cows also sell for an unusually low price. We do not advise those of our readers similarly situated to buy cows and winter them in hopes of making a good thing out of it by selling them at a high price in the spring. They may or they may not

make money by the operation. But we think we are perfectly safe in recommending those farmers who have plenty of straw and stalks not to sell their cows; and if they will need more cows next summer, we think they can buy now and winter them over to good advantage.

A cow will eat say three bushels of chaffed hay per day. So far as *bulk* is concerned, we must not vary much from this standard. In our own case, however, we would feed 2½ bushels of chaffed straw and stalks, half a peck of bran, and half a peck of corn-meal per day. We think a cow can be wintered better and (with us) far cheaper than on hay alone. If you have plenty of clover-hay it may take the place of the bran. But do not try to winter the cows on straw and stalks alone. It is very poor economy.—*American Agriculturist*.

How Little Land Will Keep a Cow.

On the first day of June last I commenced cutting clover for one cow, confined in a yard, enclosed by a high, tight board fence, with a stable attached, in which she has been fed. She had no feed but fresh clover from the first of June to the fifteenth of October, and all taken from one-fourth of an acre of ground. She has averaged eighteen quarts of strained milk per day, from which my wife has made eight pounds of butter per week, during the four and a half months. The cow is five years old, and is a cross of the Ayrshire and Durham. She has given more milk, more butter, and of a better quality, than she has ever done on pasture. On one-eighth of an acre I have raised one hundred and fifty bushels of sugar beets and carrots, which, with the two tons of hay, will keep her handsomely the balance of the year. The labour of cutting clover for the cow is less than driving her three-fourths of a mile to pasture. In the dairy districts the usual estimate is four acres to the cow on the hay and pasture system; whereas, by sowing and raising roots, five-eighths of an acre is found to be sufficient. I will state further, what I believe from nearly thirty years' experience is, that there is no crop so valuable for selling as clover—no crop, so many pounds of which, and of equal value for milk and butter, can be produced from an acre of ground. Sweet corn is a good crop for late feeding, where clover will not grow, but not profitable for winter feeding.—*Ex.*

Feeding Milk Cows.

W. H. Tanner, in the *Country Gentleman*, says that the most profitable feed for cows giving milk during the winter, and that used in nearly all the best dairies producing milk for New York market, is a good quality of wheat bran and corn meal mixed as follows: Eight pounds of bran and corn meal for each cow daily. If the above can be thoroughly cooked with cut hay, it increases its value about one-fifth by actual experiment. I produced from fifty cows 500 quarts of milk daily on ten pounds of feed mixed as above and thoroughly cooked. I then changed to dry feed, when it took thirteen pounds of the same mixture to keep up the flow of milk. Brewer's grains, of which the gentleman speaks, produce an inferior quality of milk, and would be very much more expensive than other feed at the prices named. If not so situated as to cook the food used, considerable benefit would arise from soaking it, even in cold water, from six to ten hours before feeding.

Veterinary Department.

Prevention of Abortion in Stock Animals

In the *London Farmer*, of Oct. 7, we find an article on the prevention of abortion in stock animals, credited to G. Armatago, and copied from the High and Agricultural Society's Transactions. Some of the directions given may be useful to stock-breeders in this country, and we condense them.

The causes are, the author thinks, rich food and want of proper exercise, acrid digestion, and its train of evils, with frights, &c., &c. The great cause is improper feeding. Avoid this, and two-thirds of the difficulties are swept away. All the rest are avoidable by proper housing, exercise and quiet. Too many pregnant animals should not be placed together, nor should one of them be placed among a number of males. Quiet companions and secluded pastures in summer, and roomy boxes, sheds, &c., when cut food is supplied to them, and more care should be observed as the season of pregnancy advances.

Exercise Mr. Armatago thinks is highly essential as food. A proper amount promotes digestion, and renders the less nutritious articles of diet more available during gestation than would otherwise be the case. Bleeding, when exercise is regular and judicious, is entirely unnecessary. When very nutritious food is used, it should be combined with that which is less nutritious and more bulky. Bran, with hay and straw chaff, answers admirably to reduce the heating qualities of corn, while grass, clover and roots, answer the same purpose in their season. By care in this matter both constipation and diarrhoea, which are very dangerous in pregnant animals, are avoided, and vigor maintained without any resort to medicine.

Acute indigestion gives rise to constipation, diarrhoea, dysentery, hoven, &c., and these in turn to mechanical causes of abortion, which can only be avoided through an observance of the rules of hygiene. Healthy animals treated upon rational principles of dieting are seldom or never troubled with such difficulties as colic, staggers, tympanitis, or impaction of the stomach—they are almost invariably the result of some neglect or mal-practice and to avoid them is to avoid many causes of abortion. Pregnant mares should never be turned loose in their pastures immediately after being unharnessed, and particularly if they are warm in for the harness. At such times there is more or less irritation of the skin which causes them to roll, because nothing is more agreeable to an animal under such circumstances; still there is great danger that some displacement or rupture of attachments of the foetal membranes may occur, resulting in abortion and the loss of the foal, or sometimes, by a false presentation of the fetus, of the loss of both mare and foal.

Laxative medicines may be useful sometimes, but they should always be of a gentle nature. With proper food and exercise medicines will be rarely necessary. Cleanliness is very important, not because balms have a direct effect upon the uterus, but because by long continuance, added to nervous excitement, the general health of the animal is impaired, and in such cases there is always danger of miscarriages. Special attention to the quality of the water is also important. A pond into which the drainage of stables or water closets is allowed to flow is totally unfit for cattle. It is no argument to say that stock sometimes

show an apparent preference for such water as compared with that which is known to be pure. Mr. Armatago accounts for this by saying that such water is considerably softened by alkaline salts which find their way into it, and the supernatant portion, when removed, may appear tolerably clear; yet it does not alter the nature of the fact that it contains certain elements which are productive of evil consequences, and it would be wrong to omit it from the list of causes.

To avoid the danger of ergotism, particularly in wet seasons, late mown pastures are preferable, because then seeding grasses will be impossible. Humid localities are most liable to ergot in rye grass, as an immature and imperfect growth takes place under such circumstances. The true precaution is to mow so late that seeding is impossible at the time the breeder desires it for pasture.

U. S. Army Rules for Treating the Horse Disease.

The spread of the epidemic catarrh has led to the promulgation of the following rules for the treatment of horses affected by it:

On the first appearance of the disease, give the horse a thorough steaming with boiled oats placed in a bag, and so fastened to the head that the steam from the oats will be inhaled. Repeat this until the discharge from the nostrils is free and of a natural colour. Then take the leather, or, what is better, carbolic disinfectant, in grains like large sized cannon powder, place it in a shallow pan, and burn it while the horse will be obliged to breathe it.

If the throat is sore (which generally will be the case) apply frequently hot vinegar, holding it well in with the hand, and wrap the throat in flannel dipped in vinegar. Sponge out the nostrils frequently with warm vinegar. Blanket well night and day, but not enough to produce sweating, and give plenty of fresh, clean bedding.

Give several bran mashies, with from one-half to one ounce of powdered nitre in each, and use linseed meal or flaxseed in the oats. Use tepid water in the mash. The hay and oats should be moistened with water—preferably tar water.

Most cases, if taken in time, will yield to the above treatment; but, should the attack be very severe, accompanied with considerable fever and very sore throat, instead of the vinegar, an embrocation of equal parts of linseed oil, turpentine, tincture of cantharides and hartshorn should be rubbed in, night and morning. "Powell's Embrocation" is very good.

Give as a drench, night and morning, the following:

| | |
|------------------------------|------------|
| Spirits of nitric ether..... | 1 ounce. |
| Landanum..... | 4 drachms. |
| Nitrate of potassa..... | 3 drachms. |
| Water..... | 1 pint. |

Mix. Should the horse refuse his feed, offer him frequently thin gruel with a handful of pulverised slippery elm bark and horceae root stirred in it.

When convalescing, exercise gently daily and stimulate the appetite with the following:

| | |
|-------------------------|------------|
| Extract of gentian..... | 6 drachms. |
| Powdered ginger..... | 2 drachms. |

Mix. A handful of wood ashes mixed with a little salt thrown into the feed trough for the horse to lick up, will be relished by him and be beneficial.

INFLAMMATION OF THE UDDER OR BAG IN COWS.—We have lately been consulted about a number of cases of inflammation of the udder in cows, which has generally resulted from exposure. In the treatment of such cases, the animal should be placed in a comfortable stable and given three-quarters of a pound of epsom salts dissolved in a couple of quarts of water. After the medicine operates, give a teaspoonful of saltpetre three times a day. Foment the udder with warm water twice a day, and afterwards rub in a liniment composed of tincture of camphor, two ounces; and tincture of arnica, three ounces. If the swelling of the udder becomes very hard, apply a liniment composed of liquor ammonia, one ounce; olive oil, four ounces; and one dram of iodine. A little of the liniment should be applied with smart friction, three times a day. The food for a few days should consist principally of bran mashies.

To keep the udder warm apply a cloth with holes cut in it for the teats to pass through, and secure it around the body by means of a bandage or soft rope; then wool or wadding may be carefully placed around the udder, which will tend to keep up a proper heat in the part.

HIDEBOUND IN HORSES.—We are often called upon to prescribe for horses affected with what is called hidebound. Hidebound is not a disease of itself, but it is a symptom of many complaints. If any of the organs of the body become diseased, the animal becomes reduced in flesh, and presents this condition. In other cases, it is the result of faulty digestion, which may be relieved by attention to the feeding—by giving nourishing and easily digested food, with the careful use of either mineral or vegetable tonics. Good grooming and regular exercise also promote a healthy action, and bring about a normal condition of the parts.

Oil Meal for Calves.

A correspondent of the *Ohio Farmer*, relates his experience in feeding oil-meal to calves, which he found highly beneficial. The calves were taken from the cows when three days old, and taught, at first, to drink sweet milk, on which they were kept until the stomach became strong, when milk that had stood over one milking was fed twice a day. At this time he commenced feeding oil-meal, stirring it into boiling water, and afterwards mixing with the milk. The quantity which he could hold in one hand was used at first, and, as the calves became accustomed to it, this quantity was increased. When too much was given, scours was produced, which was readily controlled by reducing the quantity of the meal. This feed was continued until pumpkins were ripe, when they were substituted for the milk and meal. Afterwards good hay was given until February, when bruised oats were added, until the pastures were ready, when the grain was dropped, and the calves were turned to grass, and on October 5th they weighed 2,210 lbs. (the pair on which the experiment was made). This showing is a good one surely. The stock to which the calves belonged is not given.

Poultry Ward.

How to Make Hens Lay.

There are many hens kept through the winter which are not worth their feed, because they are chilled and half sick from being forced to live on food not suited to their needs, or are too old for use. A hen is an egg-laying machine, and in order to keep it in running order, it must be fed with a variety of food, out of which it can combine the various parts of the egg—white, yolk and shell.

Winter is the hardest season for hens, and they require more attention at that time; but if suitable food is given, and the location of their house is sunny and comfortable, one can safely count on as many eggs in December, January, and February, as in the summer months. Their food must be varied; this is an essential item in the care of hens. It is the best to feed corn, wheat, oats, buckwheat, and potatoes; having part of the corn just from the cob, and the rest either cracked like hominy, or in ground meal, and we find it works better to feed whole corn at night, and the more easily digested food at morning and noon.

When the cold weather becomes settled, it is best also to wet up the morning and noon feed with scalding water, and feed it quite hot; for Mr Cock-a-doodle-doo and Dame Partlett like a hot bit and sup of food when the air is frosty and biting quite as well as you and me; and they also like to feel comfortable and happy, and will do their work much more regularly if this little attention is granted to them.

Small potatoes, boiled and mashed, are also valuable food for them, and it is a good plan to boil up a large kettle of them several times a week; corn meal or wheat screenings can be mixed with it, but with or without grain, it will prove a palatable dish and be greatly relished. A little salt sprinkled over the potatoes will make them more healthful. The old idea that salt will kill hens is not exactly a true one; perhaps if they ate large bits of rock salt it might prove injurious, but we know from experience that salted curd makes chickens thrive, and that hens eat of it voraciously.

The practice of eating feathers from their own and each other's necks is also cured by an application of salt to their food, in liquid or bulk. A tablespoonful of salt stirred into a gallon kettle of food makes it of better quality.

Scrap cake, which can be purchased of the butchers at a cheap rate, is a very healthful food for poultry, as it will supply the place of worms and bugs, and gives more warmth to their systems. It can be bought in large cakes, and cut into slices, mixing it with the boiling hot food given morning and evening.

Beef's liver, lights and heart, if chopped fine, are also highly relished, and meat bones with small fragments attached are desirable food, and oil cake is as good as anything else. For several winters we have kept a kettle behind the stove, into which all fragments of food were thrown—apple and potato parings, skins of all vegetables, bits of cooked food, and all the debris from the kitchen and dining-room. At noon time the whole mess is boiled up and thickened with corn or oat meal, or wheat screenings, and it is given every day to the hens; the results are seen in plenty of fresh eggs all winter, and our breakfasts are rendered delicious by their aid.

But after all, unless we give food that will permit the hen to manufacture the egg shell, it will often produce fat and no hen fruit; occasionally an egg without a shell may be dropped and then we know that lime, old mortar, bones, or something containing shell material, must be provided. If bone meal can be purchased, it is the best food; if not, we must burn all the meat bones we use, then pound them and mix with the boiling food. Oyster shells pounded are good; and bits of broken crockery are esteemed as tit bits by all "biddies."

Green food, such as cabbage heads, &c., is also very much relished, and farmers should always remember to give the refuse cabbage leaves to the hens rather than to the hogs.

Boxes of coal ashes, wood ashes, and sand or gravel, are also needful articles of furniture in every henery; and air-slacked lime—a shovelful every few days—is a dainty to the hens. If piles of ashes and lime are laid in the corners of the house, the hens will roll in them, and keep themselves free from vermin.

We keep the Buff Cochins, and find them the best layers and the most delicious for the table; they also make good mothers—but are not too much inclined that way—are not nearly as troublesome about sitting as other varieties, and will fatten charmingly. At seven or eight months old, the chickens will frequently weigh from six to seven pounds, and that without special feeding.

Of course, if we would have the delicacy of fresh eggs all winter, we must take a little extra pains—must provide warm quarters for them, and must give warm and varied food; yet in the end the trouble is slight, and the returns are ample. With twelve hens and one cock, we are supplied with six eggs a day at this season; and we think that the supply will continue through the next three months, if not longer.

It has been ascertained by a German naturalist that the ovary of a hen contains about six hundred embryo eggs. The first year not much more than twenty are matured; the second year, one hundred and twenty; the third, one hundred and thirty-five; the fourth, one hundred and fourteen; and for the next four years the number decreases twenty each year, and by the ninth year she lays only ten eggs. This shows us that, up to the fifth year, hens increase in value, and then are better fitted for the soup pot than the henery.—S. O. J. in *Country Gentleman*.

Feeding for Eggs, &c.

A writer in the *Working Farmer* gives the following advice with reference to the feed of fowls for producing eggs, or for fattening purposes:—

Hens cannot produce eggs unless their food contains the elements of which the egg is composed. The kind of feed that is offered to hens must be determined by the object to be attained in feeding them. Hens intended for the market should be fed on that kind of grain which is known to contain a large percentage of the fatty or oily substances. But hens kept as layers should be fed on that kind of grain which contains a large share of the albumoids or egg-producing elements.

In addition to the essential quality of albumen required in the organism of the fowls, the laying hen requires an extra amount for ovation—the white of the hen's eggs being about 12 per cent. of albumen—and this must be furnished in her feed. By referring to a chemical analysis of the different cereals, it will be seen that corn contains the greatest

amount of fatty substances, while wheat contains a larger amount of albumen than any other cereal. To fatten hens, therefore, feed corn. To procure eggs, feed wheat. Meat once a-day, in winter, will prove beneficial to laying hens.

I allow my hens free access to troughs always kept well filled with wheat screenings from the mill. If allowed to choose their own time for eating, hens will eat often and but little at a time—never too much. Chickens should be furnished with plenty of limestone gravel. Some say pure water is essential to laying hens; I prefer to give them milk, as that fluid not only serves to moisten their food, but also contributes albumen, which goes to the formation of the egg.

Of course the kind of food, when there is not much variety will have a special effect on fowls, animals or men; but we doubt whether this rule of selecting fatty or oily grains to produce fat, and other grains containing "albumoids" in abundance to obtain eggs in preference to fat, is a rule which sagacious poultry breeders will generally heed. A far better rule, in our judgment, is to let the flock select their own food as much as possible—that is, let them have access to such food as is known to suit them; let them have all they want of it, and the "albumoids" and the "fatty and oily substances," which it is deemed they should possess, will not be slow in forming part of the chicken economy.

The idea of feeding wheat as a specialty for eggs, is probably about as correct as feeding egg-shells to produce other egg-shells. Some think it extremely important that lime, in the form of oyster or clam shells, or of pounded bones, should be given to fowls, or they will lay soft-shelled eggs. These substances make good grinding materials in the operations of the gizzard, but whether, if digested, they take on form of egg-shells more readily than they assimilate to flesh and feathers, and bone, is not yet demonstrated in our judgment. But if one article of food is a speciality for a certain part of the fowl—the egg-shells or the albumen for instance—then we should know what to feed to produce feathers, or the horny material which enters into the beak and claws, or the skin, or the eyes, or the intestines. Some Brahma chickens have a ridiculous habit, after parting with their down, of running about several weeks stark naked or nearly so; cannot something be fed them to produce feathers at the right time, or something else to protect them against the heat or the cold? The answer of course is in the negative, and we strongly believe that the same is true as to what food will operate as a speciality for eggs or fat. A fowl's gizzard is a chemical laboratory in which the nature of things is very materially and rapidly changed, and appropriated for purposes which we cannot know very definitely. Fowls eat some things which, if they consulted our tastes, they would be sure to discard—things which cannot be mentioned always to ears polite, but it will embarrass chemistry to discover any trace of them in the eggs or the flesh. The best rule is to feed them what they like and plenty of it, and that of course includes a large variety. Let them choose their food where it is possible. They certainly tire of special articles when confined to them week after week, just as human beings do, and it is then that they go to eating eggs, or feathers, or even each other's flesh, and disgust their owners by refusing to lay eggs, or to grow large and fat. It is more science than they can stand; but give them a variety to choose from, and consult their own taste to an intelligent extent, and that wondrous internal manufactory to which their food is consigned will, as a rule, not fail to build up the hen in all her departments to the full gratification of her owner.

Raising Poultry.

In reply to a correspondent Henry Stewart gives the following practical ideas in the *New York Sun* about poultry. On two acres of land it would be folly to attempt to keep 1,000 fowls with the expectation that they could be permitted to have any range. If closely penned up 1,000 fowls might be kept on two acres by the exercise of the utmost care and by an experienced keeper. But there would be no accommodation for young chicks and the necessary coops to shelter them. It is possible that 400 hens could be kept on two acres but not any more. I have had some experience, and would rather have at the rate of one acre to 100 fowls than less; but I have no doubt that I could succeed with 400 on two acres. The ground should be enclosed with a picket fence, and the buildings faced on the north side and facing to the south. The height of the fence should be five feet for Brahmas, and nine feet or more for the more active fowls. I have found a roosting-house eight or ten feet long, twelve feet wide, and eight feet high at the back, and twelve at front, with a single sloping roof, and built of common boards, not battened, but with the joints open quite sufficient accommodation and quite warm enough for 200 fowls. Fresh air is of vastly more importance than warmth. In a climate much colder than that of New York, I have never had a fowl's comb frozen in such a house as this on the coldest nights, when the temperature has been below zero, and a strong wind blowing. Too much warmth induces diseases; catarrh, roup and dysentery are caused by impure air and warmth, produced by huddling in a close apartment. Artificial warmth is better than sweating in this manner. A setting house, adjoining the roosting-house, and of the same size, needs to be provided, without windows, and with a shelf all around, on which to place the nests, raised two feet from the ground. Another shed, adjoining the roosting-house at the other end, open in the front, should be provided for shelter on stormy days and for the fowls to wallow in. Thus three apartments, adjoining each other in a line, are needed for 200 fowls, and by additional sets and colonies may be increased so long as there is room for them. I have found light Brahmas the best on the whole. They are good layers, very gentle and tame, and easily handled, weigh seven or eight pounds when mature, and are not able to get over a five foot fence—they are hardy. I have succeeded well with Dorkings, but they are more inveterate sitters, and not so easily broken up as the Brahmas, are not so heavy at two years old, not so prolific layers, and are more tender. Doubtless the very best fowls for common use to commence with are good young native hens, supplied with Brahma and Dorking cocks each year, alternately. But there is a great variety of opinion in this respect, and beginners should experiment till suited. It is entirely safe to say to beginners, commence to go into this business gradually, and learn as you go along, and as success comes increase as may be desirable. A new beginner will inevitably fail if he commences on a larger scale than with fifty to one hundred fowls.—*New York Sun*.

Somebody says a good egg is made up of ten parts shell, sixty parts white, and thirty parts yolk. The white of an egg contains eighty-six per cent water, the yolk fifty-two per cent. Average weight of an egg, two ounces.

How to Fatten Chickens.

The *Boston Journal of Chemistry* gives the directions below for fattening chickens. Ground oats may be an excellent article for fattening but we are at a loss to understand why a change of feed to something else would not promote appetite and result favourably. The great object is to have the fowls eat an abundance of something which will fatten, and as there are other things besides oats which will do this, it would seem an improvement to the plan to alternate occasionally—certainly in case the fowls showed any symptoms of being cloyed by confinement to a steady diet.

It is hopeless to attempt to fatten chickens while they are at liberty. They must be put in a proper coop; and this, like most other poultry arrangements, need not be expensive. To fatten twelve fowls, a coop may be three feet long, eighteen inches high, and eighteen inches deep, made entirely of bars. No part solid—neither top, sides, nor bottom. Discretion must be used according to the size of the chicken put up. They do not want room; indeed, the closer they are kept the better, provided they can all stand up at the same time. Care must be taken to put up such as have been accustomed to be together, or they will fight. If one is quarrelsome, it is better to remove it at once, as, like other bad examples, it soon finds imitators. A diseased chicken should not be put up.

The food should be ground oats, and may either be put up in a trough or on a flat board running along the front of the coop. It may be mixed with water or milk—the latter is better. It should be well soaked, forming a pulp as loose as can be, provided it does not run off the board. They must be well fed three or four times a day—the first time as soon after daybreak as may be possible or convenient, and then at intervals of four hours. Each meal should be as much and no more than they can eat up clean. When they have done feeding, the board should be wiped, and some gravel may be spread. It causes them to feed and thrive.

After a fortnight of this treatment you will have good fat fowls. If, however, there are but five or six to be fattened, they must not have as much room as though there were twelve. Nothing is easier than to allow them the proper space as it is only necessary to have two or three pieces of wood to pass between the bars and form a partition. This may also serve when fowls are up to different degrees of fatness. This requires attention, or fowls will not keep fat and healthy.

As soon as the fowl is sufficiently fattened, it must be killed; otherwise it will not get fatter but will lose flesh. If fowls are intended for market, of course they are or may be all fattened at once; but if for home consumption, it is better to put them up at such intervals as will suit the time when they will be required for the table.

When the time arrives for killing, whether they are meant for market or otherwise, they should be fasted without food or water for twelve or fifteen hours. This enables them to be kept for some time after being killed, even in hot weather.

NUMBER OF EGGS A HEN WILL LAY.—It has been stated that the ovarium of a fowl is composed of 600 ovules or eggs, therefore a hen during the whole of her life cannot possibly lay more than 600 eggs, which in the natural course, are distributed over nine years.

Healthy Hen Roosts.

If we would keep poultry in a healthy state during the winter, the henry must have its house cleaning as well as the dwelling house. Clean out the nest boxes, and whitewash them inside and out, ready for another spring; and when fresh hay or straw is put in, sprinkle a handful of flour of sulphur into each; paint the roosts well with petroleum oil or kerosene. Clean out all the earth underneath the hen roosts, and sprinkle fresh sand or loam over the whole floor of the room. If this is well attended to every autumn, there will be no danger of diseased, vermin-covered poultry, but the whole stock will be in a healthy condition. Next see that there is a good supply of pure water every morning for their use.

There is a receipt for keeping fowls healthy, which has been sold under the titles of "Universal Poultry Drops" and "Poultry Keeper's Friend," and its use has been found very beneficial for all kinds of poultry. To half a pound of sulphate of iron add one ounce of diluted sulphuric acid, and pour it into two gallons of water; let it stand fourteen days after bottling it, and then put a teaspoonful to every pint of water, every other day, and let the fowls drink it freely. Chickens should have the same amount about twice a week. The effect of this stimulant is soon apparent, the feathers of the birds will assume a rich, glossy appearance, and the whole flock will be in the best possible health and spirits. If poultry are affected with the dry roup, this remedy will prove a cure, and will ward it off from flocks that are not tainted.

With a little attention to cleanliness, large flocks of poultry can be kept free from disease, and either fattened for market or so fed that they will give a bountiful supply of eggs.

At this season of the year, it is well to let the fowls have the run of the orchard and the garden, and they will destroy quantities of worms, and bugs and other insects. A hundred fowls in a quarter of an acre will do good service to the horticulturist and the gardener, and lay a large number of eggs, which are always a cash article, and desirable in the kitchen and on the table.—*Country Gentleman*

How to raise Turkeys.

In the first place, select a good one. The autumn, or early winter, is the most favourable time for that, just before the birds are sent to market. Keep them well during the winter. In the spring, a few days before they begin to lay, put them in an enclosure, where it is most desirable to have their nests, and where they cannot get out. After they have made their nests, they may be set at liberty without any fear of roaming or straying. Next, take good care of the eggs. They should be gathered carefully every day, and placed between layers of flannel or cotton, in a place of uniformly cool temperature, and turned over every day. As soon as the birds are hatched, feed them with warm bread and milk, well peppered, with boiled eggs added, or thickened with cooked corn meal, or wheat middlings, which is better. A little care in these matters will repay all efforts. Before I knew how to take care of eggs, I set thirty eggs, one year, and but one of them hatched. The next year I set forty eggs, and nearly all of them hatched and the birds lived. At present prices, raising poultry is a much more pleasant and easy occupation than the slavish drudgery of making butter and cheese.—*American Rural Home*.

Feeding Turkeys.

The *Poultry World*, in an article on turkeys, has this in relation to feeding. The practice of most farmers who raise turkeys is not to feed them at all after the young birds are six or eight weeks old. They are driven off to the pasture or woods early in the morning, and get their living where they can find it. Their chief food is grasshoppers and other insects, and they do the pastures and meadows a great service in keeping under these destructive creatures. This may be well enough where insects and mash are plenty. But upon many farms the range of woodland is exceedingly limited, and the growth of the birds will not be satisfactory without feed from the corn crib. They should come to the roost every night with full crops, and if, on examination, this is not found to be the case, they should be regularly fed once a day, at least. There is no danger of fattening a young turkey on a good range in the first six months. With first-class stock, full feed will make a difference of four or five pounds in the weight of the birds at Thanksgiving. Turkeys like a variety of food, though they do very well upon corn, which they never refuse while in health. They are very fond of a mash of boiled potatoes and Indian meal, and take admirably upon it. Whatever the provender, it should be fed regularly, and the birds kept thriving from the shell to the butcher's block.

Green Food For Fowls.

Mr. Wright, in his book on poultry, thus talks of the importance of green food to poultry that is confined:—"The last requisite in the shape of diet is a regular supply of green food. Here, again, fowls kept on grass will need no attention; but for birds penned up, the daily provision of it is an absolute necessity, though most beginners are ignorant of it. We well remember, in our own early experiences, how our fowls died, we could not, at first, tell why; and one fine Buff Cochon cock, whose only fault was a strong vulture hook, was in particular greatly regretted. An experienced friend let us into the secret, and after that we had no difficulty in keeping fowls, even where it is often said they cannot be kept in health—viz., in a yard paved with large flag stones. The best substitute for natural grass is a large, fresh turf, thrown in daily, to each four or five hens; and even in towns it is often possible to procure this, by giving children a few pence every week to keep up a regular supply. Where turf is not allowed to be taken, grass may be cut or pulled, but in this case must be cut into green chaff with shears or a chaff machine. The latter plan is how we actually managed for years, in a yard only sixty-seven by thirty-five feet, divided into six pens; paying some child a few pence to bring fresh-cut grass daily, cutting it up and mixing it with their soft meat."

Leghorn Fowls.

I have kept Leghorns for 7 or 8 years and I like them better than any other breed I ever kept. A year or two ago I changed the Leghorns for the Dorkings, but this year, good-bye to the Dorkings. I shall go back to my first love. The Leghorns are the best hens I ever had for laying. They are always on the lay, but when you want chickens hatched you must get something beside the Leghorns. The Brahmas are good for city yards; they do not ramble much, but the Dorkings want a hundred acre farm to ramble over while getting their food.—A. S. Fuller, before Am. Institute Farmers' Club.

Horticulture.

EDITOR—D. W. BEADLE,

CORRESPONDING MEMBER OF THE ROYAL HORTICULTURAL SOCIETY, ENGLAND.

Our Apple Crop.

There has been an unusually fine crop of apples in the New England States, and some parts of Western New York, so that prices for first class apples have ruled considerably lower than for several years past. It is said that in some places fine winter fruit has been left to perish because the city markets were so glutted that apples would not bring enough to pay cost of barrel and freight.

The crop of apples in the Niagara District, however, has not been unusually large, and though in consequence of the increased quantity in other places the prices have been lower, yet we believe our procurers have obtained a fairly remunerating price for their winter apples. First-class fruit has brought about two dollars per barrel, delivered at the wharf. The cost of barrel has been 35 cents, and if we add 25 cents for picking and packing, and 15 cents for delivering at the wharf, making a total of 75 cents per barrel, there will still be left \$1.25 for the apples.

We have always believed that our farmers could well afford to grow apples at one dollar per barrel, and then make more money from the few acres devoted to apples than they usually made from all the rest of the farm put together. After getting from two to three dollars per barrel for apples, it seems to be a great falling off to accept only one dollar. But these fluctuations in price are not confined to the apple crop. Everything we produce is subject to the same commercial vicissitudes, and only those who patiently and judiciously pursue their business, accepting low prices or high prices as they happen to rule, will make their business profitable.

But the growing and selling of fruit does require the use of brains, just as much as the raising and selling of fine-bred stock. He who embarks in this department of agriculture as a special line of production needs to inform himself upon all the conditions of success. He must select his farm where soil and climate are most favourable to the growth of the fruits in their highest perfection which he intends to cultivate. He must also remember that cost of transportation is a very serious item. If he be obliged to team them a long distance to market, it is a serious expense; if they must be transported by rail, this is much more expensive than transportation by water. All these things need to be well considered, for they materially affect the profits of the producer. But when the business of fruit growing is conducted with judgment and forethought, it will be found to be as remunerative as any other branch of agriculture.

Cutting Bark Trees.

Many people think that in cutting bark trees of any kind, they accelerate their growth. This is a great mistake. Even in young fruit trees, if you have two or three shoots from an injured or out down plant, you will get a finer, more healthy, and at the same time, more vigorous growth by allowing them all to live for a while—or until their size renders it necessary to amputate some of them—than if you cut them off and allow one only to grow to further maturity. As an instance of this fact, I some years since planted a white willow hedge. This hedge was kept trimmed, and of course did not grow to any great extent in branches. But one plant next a building was left untouched, and the stem of that plant now measures eight inches in diameter, whilst the stems of any—even the best of the others—would measure less than three inches in diameter. I had some Dwarf Standard Pear trees killed by fire blight to within one foot of the earth. I cut these down to about six inches above the ground, and allowed them to sprout out, which they did most vigorously; I left three sprouts, and subsequently cut away all but one. The growth of this tree is not as good since cutting back these supernumerary sprouts, as before. Trees are fed by their leaves, and provided the roots are good, will grow faster with plenty of leaves than if deprived of some supernumerary sprouts often thus pruned with the intent of turning the full force of the sap into one channel; of this fact I am quite confident, and have proved it many times.

I visited some time since a very nice nursery garden in my neighbourhood. There was a pretty Norway spruce hedge across it. All the hedge was—as in the case of my white willow hedge kept trimmed, except a plant on each side of several gateways through the hedge. Where these plants had been allowed their full growth of foliage their stems were three times as large as those immediately adjoining, which had had their foliage and small branches curtailed once a year.

C.

Sulphur as a Destroyer of Mildew.

A paper was recently read before the Royal Hort. Society, England, by Charles Roberts, F.R.C.S., in which it is shown that pure sulphur can not act chemically upon either animal or vegetable organisms, and that the beneficial effects of sulphur in destroying mildew are due to the presence of sulphurous acid in the common flowers of sulphur. Hence we learn that the efficiency of any material used to prevent or destroy mildew or any fungoid growths, depends wholly upon the amount of sulphurous acid it contains; and that charcoal, which is capable of absorbing and retaining gaseous sulphurous acid, when thus impregnated, is quite as effectual as sulphur in destroying mildew.

Asparagus Culture and Manure.

I have tried all kinds of manure for asparagus plants, and all sorts of treatment. Nothing however, produced such a rank growth and thick crop as fresh cow manure. We have often used horse manure, well rotted, and salt and various other applications. But the pure cow manure, spread over the bed about three inches thick, proved far the best. The year before last we had the most wonderful growth, and, as we believe, entirely from this cause. We always leave our stalks until they are about one foot high before cutting them; we fancy they are much better, and we know we get three times as much vegetable food fit to eat. If we cut them just as they show above the earth, and to get sufficient length, point the knife somewhat diagonally downwards, severing the plant about three inches under the soil, we only get an edible portion of about two and a half inches in length; whereas if we wait one or two days more for increase in growth, and cut just at the surface, we get nearly or quite nine inches of excellent food, and we think our bed yields more of this long kind than the short, and that the plants really thrive better. After the first cutting being thus delayed, there is no more lost time, as all future growth, by being allowed to flourish a little longer before cutting, comes in rotation the same as if cut earlier; but, as I before said, we think better and more crop can be obtained by this treatment. C.

Bark Splitting of Apple Trees.

What is the cause of this very destructive evil, and what the remedy to be used for it? When it once begins, apparently but little can be done to save the tree. Last year we had five beautiful trees totally destroyed. The bark split all up the side of the tree facing the south and south-west; not one showed any injury in any other aspect. We tried binding up and various curatives, but all of no use. The trees were also killed; only one plum tree was, however, affected in a similar way. From the aspect of the split invariably facing the sunny side of the tree, I became convinced the evil rests in some way in the sun itself. Had it been otherwise, the split would have occurred in various positions. The evil cannot be due to too much moisture; our orchard is well underdrained, and being situated on sandy soil, could not well be supposed to be affected by this cause.

In thinking over the trouble, I became almost convinced the splitting of bark was due to the heat of the sun's rays falling on frozen trees. Consequently I placed pieces of board against the south and south west sides of each tree, after thus shading them no more splitting took place. Now I should very much like to have some experienced person's opinion on the disease, and its cause, cure or prevention. As in our case, "cure" seemed impossible especially where the injury was excessive. C.

The Dr. Warder's Strawberry.

Louis Ritz writes to the *Gardener's Monthly*, that this strawberry was raised from seed in 1866, in a cross between the Fillmore and Victoria Ovata, and has been on the fruit tables of the Cincinnati Horticultural Society for the last six years.

He describes the plant as being vigorous, with large healthy leaves, which do not suffer from the extremes of either winter or summer; the fruit stalks very strong, erect high above the foliage, blossoms hermaphroditic, berries very large, conical, regular and uniform in size, except in enormous specimens, which are of a cock-scomb shape, in color bright red, flesh red, very firm, of good flower and shipping well.

The fruit begins to ripen when the Wilson is in its prime, and continues for nearly two weeks.

The Horstine and Saunders' Raspberries.

Mr. L. F. Allen, of Buffalo, N. Y., writes to the *Horticulturist* that these new varieties of Raspberry passed the last winter in his garden without any injury whatever, even to the very tips of both main canes and laterals. This is in latitude nearly 43 degrees north, where the thermometer fell last winter two or three times to ten degrees below zero.

These and the Clark Raspberry grew well the past summer and bore good crops. The Saunders was very prolific in sucker bearing. The Horstine seemed to be hardly as vigorous a grower as the Saunders, nor to sucker as abundantly, but the fruit was large, and delicious. He ranks these three varieties, Horstine, Saunders and Clark as among the very best raspberries yet introduced.

He expresses doubts as to whether either of these will bear long carriage, so as to be valuable as market sorts on a large scale, the fruit being so delicate in structure. His soil is a rich clayey loam in common fertility as for usual garden purposes.

Clapp's Favorite Pear.

The editor of the *Horticulturist* has been visiting some large pear orchards near Norfolk, Va., containing from five thousand to seven thousand trees each. One of the proprietors Mr. Leighton, is much pleased with Clapp's Favorite, and the *Horticulturist* says that it is really one of the most handsome varieties on the place. The fruit is exceedingly pretty, ripe fully ten days before the Bartlett, of good size, handsome shape, red cheek, and more uniform in outline and size than the Bartlett.

This is the pear, we understand a tree of which the Fruit Growers' Association of Ontario has decided to distribute to each of the members next spring. We congratulate the society upon the choice made by the Directors, feeling confident that those who succeed in fruiting it will be much pleased. It is very important to ascertain as soon as possible how well adapted to our climate so desirable a fruit may prove to be.

Our Native Sweet Chestnut.

Having lately received numerous inquiries concerning the growth of this tree, and the length of time required to come into bearing, we clip the following from the *Rural New Yorker*:-

"Seven years ago, while taking down the old rail fence in front of my place, preparatory to erecting a new board one, I found several small chestnut seedlings among the shrubs, briars, and weeds which the former owner had allowed to grow along the road-side in the true shiftless farmer style. The road being quite narrow, I placed the new fence three to four feet inside of the old one, and whenever a promising tree or sprout occurred in the proper place it was preserved for a shade tree.

"One little chestnut tree, not more than five or six feet high, I noticed in particular, because it had been twisted or grown in naturally among the rails and was very crooked; but, as it stood in the exact place where a shade tree would be desirable, I carefully disentangled the stem and remarked to my workmen that it would yet be a handsome tree. I have just measured that tree, and it is twenty-eight ft high, stem at the base thirty inches in circumference, and at six feet from the ground twenty inches. The stem is as straight as a reed, except a slight crook near the ground. Last season it produced a few nuts, and this year the ends of the branches bend with their load of large clusters. This tree has received no care, except pruning, the soil about its roots being covered with a tough sod. Other trees upon my place have made equally as good growth, and I only mention this one for the purpose of showing what might be accomplished in a few years, if a man will only make a beginning.

Early Beatrice and Early Louise Peaches.

(From the *Gardener's Chronicle*.)

These two seedlings of Mr. Rivers' divide the palm for earliest with Early Rivers, which last, however, I prefer. Early Louise is a very fine peach indeed, considering how early it ripens; it has also the great advantage of colour, which the British public always so much look for in this fruit. Indeed, Royal George, on account of its deep colour, is pre-eminently the "people's peach," and is known as such - not that the "people" over really know much about the merits of such expensive things as peaches.

Early Louise grows to a fine size, and its flavour is excellent; it is also but a few days later than the earliest, and must be considered as a great gain for the market—all the above reasons being considered. I think I had a number of specimens fully 9 inches, all ripe about the middle of June, and from thence up to midsummer.

Early Beatrice is considered by many as the earliest of all peaches. It actually ripened the first season much in advance, but as my trees grow large, and could be fairly compared, I did not find it appreciably earlier than Early Rivers. It possesses a glorious colour and a sweet and tender flesh, and has only the defect of being rather small. It should thus be considered as one of the three best very early peaches in the world, all due to Mr. Rivers' careful crossing; all these peaches are of easy culture, and are not likely soon to be superseded.

Interesting Experiments in Grafting, Especially to Nurserymen.

(From American Rural Home.)

The *Prairie Farmer* gives the results of some curious experiments in grafting, made at the Illinois Industrial University, in February, 1871. Ten cions, each of the Ben Davis apple, were grafted into roots cut up into pieces. They were all grafted with equal care wrapped with waxed thread, packed in moist sawdust, set out in the nursery, April 8th, 1871, and subsequently received the same cultivation.

In the first experiment, the cions were cut into four pieces—the base called the first cut, and the terminal bud, the fourth. The root was cut into four cuts—the collar, or point of junction between root and stem, called the first cut, and point of root, the fourth. We have not room for the entire table, but will briefly give some of the more important results.

Of the first cut of cion, grafted into the first cut of root, eighty per cent. lived making about fifteen inches growth the first season.

Of the fourth cut, or terminal bud of cion, grafted into first cut of root, only sixty per cent. lived, but made average growths of nineteen inches. It is evident the first cut of cion is preferable, as my nurserymen would prefer that eighty per cent of his grafts should live, and make fifteen inches growth, to only sixty per cent. living, though they made a growth of nineteen inches.

Of the second and third cuts of cions seventy and eighty per cent. respectively lived, making growths of little over nine and eight inches—an unsatisfactory result.

Where the second cut of root was used, the second cut of cion seemed to produce best results—eighty per cent. living and making growths of nearly sixteen inches. This was even better than the result of first cut of cion and root, and should be remembered.

Where the third cut of root was used, the third cut of cion, produced best results—seventy per cent living and making growth of over ten inches. The other cuts of cion used with third of root, resulted in such low averages of living and growths as to renders them entirely unprofitable in nursery culture.

Where the fourth cut of root was used, the third cut of cion also produced the most favourable results—forty per cent. living, making a growth of over twelve inches. By averaging the table all through, it is found that the first cut of root, and second cut of cion, average the largest per cent. of living, but with a little less growth than where the first cut of cion is used. Should these results prove true in general practice, it would be to the interest of nurserymen to reject all but the first two cuts of root and cion.

Experiments were also made with roots of different lengths, and it was found that of first cut of root, six inches long, eighty per cent. lived, making growths of about twenty-two and one-half inches, while of second cut of root, six inches long, but fifty per cent. lived, making growths of but little over eight inches; but where four inch roots were used of the first cut eighty per cent. lived, making growths of over sixteen inches, and of the second cut, seventy per cent. lived, making growths of over nineteen inches. As shorter roots are used, there are great diminutions in the per cent. of livings, but in some cases an increase in the growths.

We think that it is here demonstrated, that as you recede from the collar of the root, the chances of living diminish, and that if you make the first cut about four

inches, making the top of the second cut nearer the collar, the aggregate results are much more favourable than where the first cut is longer, removing the second farther from the collar, where the root is weaker and its vitality less.

Another experiment was made with inverted roots: first cut two and a-half inches, not inverted, thirty per cent. lived, making growths of nearly fifteen inches; second cut two and a-half inches—inverted, sixty per cent. lived, making growths of over fourteen inches; bottom cut of root, inverted none lived.

Another experiment was made with roots of different sizes: roots—first cut six times as large as cion, eighty per cent lived, making growths of over twenty-one inches. roots—first cut—four times as large as cion, seventy per cent. lived making growths of about eighteen and a-half inches.

If the Illinois Industrial University will continue similar experiments for a series of years, they may succeed in establishing principles of great value to the horticulturist.

What labour of the head or hands can be more honourable than that of tilling the soil in a scientific and practical manner, as from this source all real wealth is obtained. All other trades or vocations of man are entirely dependant upon the surplus wealth of the husbandmen. He is the great central planet around which all the lesser lights must revolve. His is the great moving power that is pushing forward the army of progress and civilization, which is making this country to bloom with beauty and fit it for the abode of a higher type of mankind. Only a farmer—labour undignified—tilling the soil degrading!

Manure is a bulky material to handle, and the idea is prevalent that it won't pay to keep help to take care of it. Then again stables and barns are so constructed as to render the handling of it as expensive as possible. It is seldom that it is not lifted either two or three times; and allowing two hundred tons to be made in a single yard during the winter there is a lifting to be done that is equal to 400 tons of removal if it is only handled twice and that is the least. But we have known it to be handled as many as four times, being first thrown out of the stable or stables; it is then lifted into and out of waggons, and placed in heaps, and then these heaps are spread on the ground where they have been left. Now one of the great questions of the farmer should be just how he can make the most manure, then how he can keep it, handle it, and apply it with least expense and labor to the profitable growth of the crops. Here is the work for the winter growth of crops laid out for consideration. We hope now that election is over, that the farmers will organize their clubs and discuss this subject.

Keeping Winter Fruits.

A correspondent inquires for the best way to keep winter apples and pears for ordinary management, more particularly with reference to leaving them in open bins, or casing them tight in boxes, casks, or drawers. In answer we can state that we have generally kept winter apples in open bins or shelves, made in the centre of the fruit room so that the attendant may pass around on every side to pick them over. The fruit room is separated from the rest of the cellar by a brick partition, is furnished with ventilating windows, which may be turned up or shut down at pleasure, and the temperature regulated nearly to freezing by means of thermometers. This is the most convenient mode for ordinary use, when apples are wanted for daily supply. About once a month,

or oftener if necessary, they are picked over and the "specked" or decayed ones removed, taking care to disturb them as little as possible. It is better if the owner can do this work himself, as but few hired men will be sufficiently careful, but will tumble the fruit about needlessly, and injure its appearance and keeping quality.

Fruit will keep better, however, if protected from the air, and from the constant changes of temperature which currents of air impart. Wrapping the apples separately in paper, and simply placing them on the shelf, we have found to protect them from decay, a much larger number, by actual count, remaining sound than if subjected to ordinary exposure. Apples will keep longer in barrels than in bins for this reason, and the only objection to barrelling is that they are excluded from sight and examination, and sometimes become badly rotted before their condition is discovered. Drawers would be better, if not so expensive.

We keep winter pears in shallow boxes, which may be shut closely with well fitting lids. They are thus excluded from air and light, and are easily accessible for examination. A better way, probably, would be to have close lids to the shallow bins or shelves, so that they might be easily examined at any time with the same facility as winter apples. Large and fine specimens of Clairgeau, Duchesse d'Angouleme, or Anjou, may be wrapped in soft paper, in addition to the covering. They need occasional examination as ripening approaches. With some varieties, much of their excellence depends on careful ripening; with others, less care is necessary.

It is necessary for the good keeping of both apples and pears, that they be kept in a cool outbuilding, and placed in the cellar only when it may be kept cool by ventilation. —Country Gentleman.

The Ives Grape.

The *Horticulturist* endorses the Ives grape as a successful competitor of the Concord for the market or table, or as a wine grape. As a wine grape it is of great value, and this has been acknowledged for years; but we think it will take a long time to educate the public taste from the Concord to the Ives. Our contemporary says:

The Concord at last has a rival. We welcome it. The Ives is making friends. For an early grape, to market before the Concord, we know of none better. Usually there is a period of eight or ten days when grapes which arrive in the market before the Concord, get higher prices. At such a time the Ives comes in and fills the demand. Usually it is a week earlier than the Concord. It is very prolific, healthy, and an admirable shipper; bears handling well; does not bruise, neither does it drop from the bunch, while it can be made into marketable wine, which the Concord cannot. It has grown in our opinion yearly, as we have seen its favourable reception in the markets here.

The editor of the *Rural Alabamian* says:—"We have had the Ives in full bearing only two years, but from that short experience we consider it a grape of very great promise. The vine is remarkably healthy and vigorous bunch large, and very compact; fruit large, black, sweet and vinous, with a peculiarly tough skin. This latter quality makes it valuable for transportation to distant markets. It commences ripening with the Concord, but does not attain perfection until the Concord is gone, and should be permitted to hang many days on the vine after appearing ripe. It is not equal to the Concord

in size and beauty of appearance, nor is it so good for the table; but it is superior in keeping qualities and for distant transportation, and probably for wine."

Dr. Swazey, horticultural editor of the *Rural Southland*, speaks of some specimens sent to him: "The vines is as fine as we ever saw, and confirms our previous good opinion of it, the bunch and berry being nearly equal to the Concord in size and quality, and having the advantage of ripening two weeks earlier, and continuing on the vine longer. As a wine grape, or as a market grape 'for the million,' to come in before the Concord, we should prefer the vines to any other single variety."

The "Brighton" Grape.

(From the *Rural Home*.)

This new grape, for the first time brought before the public at the Fair of the Western New York Agricultural Society, in September last promises to furnish an interesting and valuable addition to our list of grapes. It is interesting because, like the Rogers Grapes, it is the result of careful and skilful artificial hybridizing or crossing of a native (Concord) grape with the "Diana Hamburg," a cross bred seedling between Diana and Black Hamburg, both raised by Jacob Moor, Esq., of Brighton, Monroe county, N. Y., who has with unwearied zeal and patience endeavoured to secure some signal advantages to fruit culture by this practice.

The Diana Hamburg, as is well known, did not prove valuable for general cultivation, but its splendid bunches and remarkable excellence, when well perfected, rendered it a desirable parent from which to produce a grape combining the several excellences of the native and the foreign sorts. This variety, fertilized by pollen from the Concord, produced the seed from which the "Brighton" was grown, and seems to have conveyed to its progeny the fine appearance and purity of flavour belonging to the foreign blood, while preserving the vigorous growth, thick, large foliage, and ability to withstand heat and mildew, characteristic of the Concord.

The "Brighton" vine grows during the three years of its fruiting, every appearance of uncommon vigour and hardiness, enduring every winter perfectly. It compares favorably with the Concord growing along side it, and fully equals any other native sort we are able to compare with it, in health and vigor of vine and foliage, and in its abundant fruitfulness. This may not prove true when it comes to be tried in various localities, but it has now every appearance of being able to stand along with its parent the Concord, and certainly wherever the Rogers grapes will thrive.

We have been thus particular in mentioning these facts, for we know that a variety may produce fine fruit some years, and upon some soils, which can not be said to have any value for general cultivation, because the foliage, or the wood, or the roots, have not sufficient vigour to succeed in the hands of common cultivators, and in the varied soils and climates of our extensive country. If our hope that this grape may prove to have those excellences which fit it for great usefulness and popularity, should prove delusive, it will still remain an interesting fact that so fine a fruit has been produced by the thoughtful and careful artificial cross-breeding.

Mr. Moore informs us that he had larger fruit last season than this, but we make our description from that grown this year. Bunches large to very large, finely formed and sometimes shouldered. Berries nearly round, not very compact, about as much so as Isa-

bella, adhering firmly to the stem before and after gathering. Skin moderately thick—strong enough to bear handling well. Color reddish purple, every berry handsomely and evenly coloured about the shade seen in a well ripened Salem. Flavor pure, rich, sprightly and vinous, moderately sweet, not entirely free from pulp, but remarkably agreeable, and when tested along with Delaware, Iowa, Salem and Rebecca, ranking "best." The period of ripening we should judge to be the same as Concord.

The fine size and beautiful appearance of the bunches, rich colour and excellent habit of this grape, we think, must place it among the best market sorts. Its value for wine we have no means of knowing and do not consider our judgment upon the point of any value.

As no vines of this variety have been propagated, it must be some years before its real value can be fully determined, but we would not propagating it, and in due time, if it meets our expectations, we will disseminate it.

Keeping Apples in Ground Plaster or Gypsum.

(From *Rural New York*.)

"I have been experimenting the past few years with apples, and find those packed in plaster keep much longer than any other way I have tried. I use flour barrels, and find them preferable to apple barrel, as they are made tighter. I first cover the bottom of the barrel with plaster then a layer of apples, then cover with plaster, and so on till the barrel is full; then put the head in and drive the hoops tight. The plaster being of a cold nature, keeps the fruit at an even temperature, and being fine and dry, packs so close as to keep the apples air-tight. I had Northern Spy and Swaar almost as fresh in May as when they were picked, and found no decayed ones, and think they would have kept till early apples were ripe, had we not used them. Shall put up several barrels for next spring and summer use, as I am satisfied that our best varieties, such as steel's Red Winter, Wagener, and Seek-no-farther will keep several months longer than putting them up without plaster, and will retain their flavour much better besides."

We have also made similar experiments and with like success.

The Nectarine.

This fruit, possessing all the excellence and characteristics of the peach, with the glossy skin of the plum, and perhaps unequalled in beauty by any other fruit when finely grown, has been nearly given up by most cultivators on account of the destruction of the crop by the curculio. This insect selects young nectarines in preference to all other fruits for the deposit of its eggs, which has made it nearly impossible to secure a crop. But now that efficient means have been devised for destroying the curculio, we would advise those cultivators who are willing to take the necessary trouble to protect the fruit, to set out nectarine trees. The former modes of jarring the trees by striking them with padded mallets and other inefficient tools, brought down but a portion of the insects; but the better way of giving them sharp blows on the heads of inserted iron spikes, makes thorough work, brings all down, and is more expeditious. Nectarine trees may be set out the present autumn, if the soil is well drained or naturally dry, and the exposure is not a windy one.—*Country Gentleman*.

Statice Halfordii.

(From the *Gardener's Monthly*.)

Among the many flowering green house plants in cultivation, few deserve greater commendation than *Statice Halfordii*. Its large glossy green foliage, with its large spikes of blue and white flowers, remaining for months in perfection, give it pre-eminence over most easily cultivated plants.

Old plants of *S. Halfordii* are of very little use for flowering; it is therefore indispensable to obtain large young plants, before well flowering specimens can be had. In securing cuttings for propagation, those taken from the parent plant with part of the ripened wood attached are easiest propagated, and make the best plants. They are best rooted in three-inch pots, then shifted into five inch, with equal parts of loam, leaf-mould and well rotted horse manure, with sufficient sand for porosity, giving plenty of water, as abundance of moisture is requisite for the health and growth of the plant.

Regular shifting ought to be attended to, not allowing the roots to get matted in the pots, as also pinching of all flower spikes until eight or ten crowns have been formed on the plant, and it shifted into a twelve inch pot, then allow all the spikes to grow, which will be one or more from every crown; after they have grown six or eight inches long, finally shift into a fifteen inch pot, as it gives additional strength to the spikes and substance to the foliage. Always bear in mind that they require plenty of moisture, for if once allowed to get dry, the foliage is apt to decay and the plant lose its vitality.

For insuring plenty of flower, the plants require a winter temperature of 50°; they will grow in a less, but cannot rely upon them flowering so well.

Van Buren's Golden Dwarf Peach.

(From the *American Rural Home*.)

A few years ago quite a sensation was excited in the horticultural world by the introduction of the above peach. The interest did not attach to the fruit so much as to the tree, as, on account of its dwarf habit, it was said that it could be easily protected from the severity of the winter. We believe that it amounted to but little, practically, and that no one made a fortune by raising fruit of that variety.

We have just tasted a specimen—the first we ever saw, and find it quite a large, oblong peach, shaped and pointed like the Crawford's Early; of a dull yellowish green colour; flesh deep yellow; rather insipid; ripe the middle of October. It is a cling, and would be hardly tolerable if ripening earlier in the season when good peaches abound.

The tree upon which it was grown was one of several sent by Mr. Van Buren to the *Rural New-Yorker* about five years ago, and was the only one, we are informed, that survived and bore fruit. It is evidently a southern peach, and may be of some value there, but is of none here.

The Eumelan Grape.

The experience of fruit growers in Michigan seems to indicate it to be their best black grape. It is hardy, prolific, and in quality equal to the best black grape they have.—*Horticulturist*.

The Clematis as a Bedding Plant.

Considerable attention is being paid in England to the introduction of new kinds of bedding plants, with a view to obtaining a greater variety. The new strains of *Viola corunta* have been pressed into this service with somewhat varying results. In cool and moist seasons they seem to answer very well, but if the season chance to be very dry the quantity of bloom is much diminished. Since the introduction of the new hybrid Clematis raised by Messrs. Jackman & Son, attention has been turned to these as a means of diversifying the parterre. On experiment it has been found that by pegging the shoots down they can be made to cover the ground, and that from the time when they begin to bloom in July until the frosts of October and November stop their growth, they cover the beds with a profusion of bloom.

Such, however, is the difference of climate between England and Canada that it cannot be taken for granted that the same results will be obtained here. It would be quite useless for us to attempt to do it with any of the *Violas* or hybrid *Violas* which are used in England. With a nearly vertical sun and a temperature ranging from 90° to 100° in the shade, and often without rain for a month at a time, *Violas* would dwindle to nothing, becoming mere beds of barrenness. Yet there is some hope that the Clematis might be found to answer a very good purpose with us. It is not so impatient of heat, and the effects of drouth might be overcome by making the beds deep and rich, and by the occasional use of the watering-can.

On some accounts it is very desirable to bring to our aid as a bedding plant something that, being once planted, will be permanent, and which is at the same time showy and pleasing, and yet a change from the various shades of scarlet and pink that prevail among *Geraniums*. All this the Clematis promises to do, if only it be able to endure comfortably the extremes of our climate, our winter's frosts and summer's heats.

The flowers are very showy, being nearly as large as a tea saucer, of various shades of blue, violet and purple, sometimes relieved with bands of red. These are produced in great profusion and continuously from July to October, if only the plants are kept in vigorous growth. This is done in England, when they show signs of flagging, by the use of a little manure-water.

The soil recommended for the experiment is a rich, open and deep calcareous loam. Soils naturally heavy will require to be enlivened with a mixture of sandy loam, road-scrappings or burnt clay, and well drained; while those that are light and dry will need to be made stronger by the addition of clayey loam. The young plants are set out about two feet apart each way in the month of April, and cut back to six or eight good buds. As the young shoots start out it will

be necessary to peg them down in the direction it is desired to have them grow, as they soon become inextricably entangled, twining fast together by the leaf stalks.

In our climate it will be necessary in autumn to cover the roots with a good, thick mulch to keep out the frost, and as often as sufficient once a year to enrich the bed with a liberal coating of well-rotted manure. In summer it will be necessary to see that the growth is not checked by drouth. This may be done by a thick mulch of rotted manure spread over the bed in the end of April or beginning of May when the plants are beginning to grow, and which will be soon hidden by the foliage. Such a mulch would render the use of liquid manure unnecessary, enough would be washed down into the soil by the rains or the use of the watering-can, when that might be needed. When watering is resorted to it should be copious, so as to give the roots a good drenching, and applied at considerable intervals.

That the beds may not be unsightly in winter, they might be swarded with small evergreens, grown in pots or small tubs for this purpose, and planted between the roots of the Clematis when the approach of winter puts an end to their flowering.

Who will give this plant a careful trial? Should it succeed, and there is much ground to hope that it will, it will be something to have added another beautiful flower to our Canadian summer gardening.

Soil for Floriculture.

Most flowers, if not all, succeed best in sandy loam, made rich by the addition of well-rotted manure, which should be thoroughly mixed with the soil. Such a soil, thus prepared, will not become hard or baked, but will become loose and porous. It will not only afford the small and tender plants a chance for existence, but it will also enable them to perfect themselves with vigour and beauty.

If your garden is composed of a stiff, heavy soil, a good dressing of sand and manure will assist it wonderfully in the way of plant development; and some of the most delicate plants that would not succeed at all in such soil, in its unimproved condition, will, after such preparation, flourish in the most satisfactory manner.

A heavy soil is greatly benefited by being roughly spaded up in the fall, and remaining in that condition through the winter. In all cases, before sowing the seed, it is of the utmost importance that the soil should be thoroughly pulverized. This important particular should never be overlooked.—*Boston Journal of Chemistry.*

ONION MAGGOT.—An onion-grower, of considerable experience, says that he destroys the onion maggot in the following manner:—As soon as the maggots are discovered at work, remove the soil from the sides of the bulbs, by making a shallow trench with the corner of a hoe; then pour into this trench soap suds made by dissolving two or three gallons of soft-soap in a barrel of water, previously adding one pound of copras in the soap.—*Rural New Yorker.*

Camellias Blooming.

The opening of several camellia flowers this morning reminds me of the many complaints I have heard about the uncertainty of success with these beautiful plants. It is true there is an abundance of time for camellias to drop their buds, as these are formed five or six months before the flowers appear, and extremes in dryness or too much water will certainly produce disastrous results; but too high a temperature is more fatal than either of the other two. Still I do not know of any exotic evergreen that will succeed with less care. I think that two frequent waterings, re-potting, and the application of stimulating manures, kills more camellias than neglect. I have cultivated many varieties of this plant with success; in fact a dozen choice sorts was almost my first venture in house plants, when a young man, and before the *Rural New Yorker* existed; and although my treatment may not differ materially from that generally practiced by florists, will give it for the benefit of those who are not successful. I prefer a good, stiff, but rich, loamy soil and leaf mold from the woods, in equal parts. If the soil is not rich enough, a very little old cow manure is added; but this should be broken up fine and thoroughly incorporated with the other two. When plants are received from dealers the ball about the roots should not be broken, but placed in pots a little larger than the ones in which they were grown. If taken from a five-inch pot, put them in a six-inch, giving plenty of drainage; and be careful to pack the fresh soil firmly about the roots, for if this is neglected, the water applied after re-potting will pass down the sides of the pots, and not soak into the soil about the roots.

I re-pot my plants only once a year, doing this just after blooming. The plants then commence their new growth, and from this time until spring give plenty of water overhead, washing the leaves thoroughly with clean water every evening but never apply it when the sun is shining upon the plants. The temperature of a house where other tender plants are grown is usually too high for camellias; but by placing them in the coolest part, or where fresh air can be frequently given, they will not suffer.

As soon as all danger of frost is over, I remove the plants to a shady place in the open ground, and plunge the pots up to the rim in sand or other light soil, and let them remain there until there is danger of freezing in the fall. During the summer they are watered occasionally if there is a drought, or danger that they will suffer for want of moisture. When brought in from the open ground the plant should be placed in an atmosphere that is not above 55° to 65° Fahr., and giving plenty of air, shading the plants during the middle of the day. Camellias require a cool atmosphere while blooming; even a little frost is not so injurious as too great heat. In watering apply it liberally whenever required; but do not give a little at a time and every day; for this will only moisten the surface while the centre of the ball of earth about the roots may remain dry as dust. All that is required is to keep the entire soil moist, but not constantly saturated with water. If the plants become sickly and the leaves turn yellow and drop off, re-pot and remove all the soil from the roots and wash clean, then put them in fresh soil, and cut away the greater portion of the branches.—*From Rural New Yorker, Nov. 18.*

Hyacinths in Sponge.

As this is the time to plant hyacinths either in earth or water for window blooming, we commend the following experiment of Mr. Charles Reeso of Maryland, as stated in the *Country Gentleman*, to the notice of our readers; though, for our own part, we do not see why some pieces of moss, which may be stripped from any old log in our woodlands, would not be just as suitable, and far more beautiful:—

Remembering the slow growth of the bulbs in glasses, often not coming into bloom until near spring, Mr. Reeso pondered whether there is not some substance in the great laboratory of nature, more closely resembling the soft, warm bosom of the earth, than the hard, cold glass. The sponge suggested itself to his mind as possessing just the qualities required:—"Soft, warm and yielding; power of capillary attraction perfect; porous, admitting freely the fruitful atmosphere through a thousand tiny apertures; a powerful absorbent and evaporator of moisture; and besides all this, an animal substance, and doubtless filled with nitrogenous matters, which dissolving in the water, will act as fertilizers to the plants, or if they be not there in sufficient quantities, they may be placed in the water with the same result—liquid manure."

He took a large sponge, made incisions about three inches deep and two long, inserted bulbs in them, the sponge closing over their tops, permitting only the points to appear above the surface. He then placed the sponge, filled with bulbs, in the top of a large vase, and filled the vase by pouring water through the sponge until about one-half the sponge is below the water. The water was slightly warmed, and being kept in a warm room, was not allowed to become cold.

"In two or three days the bulbs began to shoot their bright green spires upward, giving promise of success, and in two or three weeks they were five or six inches high. About this time, in order to hide the unsightly appearance of the sponge, I scattered a few thimblefuls of rape seed over the surface, between the bulbs, which sprang up almost immediately, and covered it entirely with a fine moss-like mantle, adding greatly to the beauty of the experiment.

Desiring to give the knowledge and usefulness of the discovery and the enjoyment of its beauty, I now had it taken to my store in town, where it soon became an object of interest to great numbers of ladies, who watched its progress almost daily, until the bright flowers, more radiant than "Solomon in all his glory," unfolded their shining petals, filling the air with fragrance, and astonishing every one with their unusually large size and perfect forms.

The experiment was pronounced a complete success."

Sisley's Seedling Geraniums.

Jean Sisley, the great grower of double geraniums, writes to the *Gardener's Magazine* that he has been repeatedly asked what scientific process he used in obtaining the double white zonal geranium, &c., and replies from Lyons, on 15th Oct., 1872, as follows:

"When, six years ago, I undertook artificial impregnation, I first procured about fifty of the best varieties of single flowered zonals,

chosen amongst the various colourings, and about two hundred plants of the then existing double-flowering varieties. Without any preconceived theory, I impregnated all the single flowers with the pollen of the double ones which produced stamens. For three years I did not obtain any seedling worth mentioning, and I was nearly on the eve of giving it up when, in 1869, I obtained *Victoire de Lyon* and *Clemence Roger*, which, although not very good in shape, were very different in colour from any double zonals then out. This gave me courage again, and I continued. I had bought every year the new double ones brought out, and the single ones that were different in colour from those of my collection up to 1870. Since the first year I had kept of my seedlings all the single flowers that were equal in shade and shape to the old varieties, and rejected the old ones, and did the same with the double ones, and rejected all those that had but few or no stamens amongst the double-flowered. I kept even the semi-doubles when they differed a little in shade. I had been led to this selection by the idea that single flowers, issued from single ones impregnated by double ones, might perhaps be better disposed to produce doubles than the old sorts.

"This is the only scientific proceeding I have used, and, although I cannot affirm that it is the cause of my success, I recommend a similarly simple course of procedure to those who may be disposed to practice artificial impregnation on whatever kind of plant. Nevertheless, I have not learned by my practice anything that can be applied as a theory, all the seedlings from the same impregnation differing from one another. My double white is the product of a single white (one of my seedlings of second or third generation) by a double red; but four others from the same impregnation are either white, pink or red, and all single."

Select Camellias

We take the following names from the *Gardener's Magazine*:

ALBA PLURA—double white, very free flowering.

ARCH-DUC ETIENNE—blush; flowers large, superb form.

BEALI—rose crimson; good form, very free.

CHANDLERI ELEGANS—soft rose, large, showy, free.

DUCHESS D'ORLEANS—white striped with crimson.

GENERAL CIALDINI—bright carmine, finely imbricated.

IMBRICATA—rosy red, beautiful form.

JENNY LIND—white striped with rose; perfect form.

MARCHIONESS OF EXETER—clear rose-pink, superb form.

PRINCESS MARY—bright reddish crimson, very large.

QUEEN OF BEAUTIES—blush; large, fine form, superb.

ZORAIDE VANZI—blush-white, barred and plated with rosy red.

Large Seckel Pears

A. D. Webb, Bowling Green, Kentucky, has been growing seckels that measured eight inches in circumference.

Variogated Conifers at Castle Kennedy.

First and foremost among these I place *Abies Douglassii* Stairii, the silver Douglas fir. I saw the parent plant recently at Castle Kennedy, in Wigtonshire, where it was raised by Mr. Fowler, the Earl of Stair's talented gardener, of grape-growing notoriety. It is a strikingly beautiful tree, even in the autumn, but far more so in the spring, when it is a veritable silver, indeed, almost a pure white species. This, unlike some so-called variegations, is not the result of weakness or delicacy of constitution. I had the opportunity of examining some hundreds of these beautiful trees, which in hardness, rapidity of growth, and vigour of constitution, seem to equal their green parent. There can be little doubt that a brilliant future is in store for this silver spruce in our woods and landscapes. It is impossible to conceive of anything more novel and charming than a free-growing spruce with young shoots almost as white as the *Acer Negundo* variegata. It will probably soon be in the trade, as the noble earl whose name it bears, with his usual generosity, has made a present of it to Mr. Fowler, to whom is due the credit of raising and propagating it. It seems to have no tendency to reversion; the entire stock of grafted plants are perfectly true to the original.

Heeling-in Trees in the Fall.

(From the *Gardener's Monthly*.)

We have no doubt that more trees are lost from imperfect heeling-in than from any other cause whatever. This every observing person, who has seen the way in which the roots of trees are buried in masses with large interstices of air every where among the roots, will assent to. Trees badly heeled-in should not remain so twenty-four hours before planting out. Clods of masses of earth are merely thrown on the top of the roots and only shade them from the sun's rays. In a few days the roots will become dry, because they are not in contact with the moist earth. If the heeling-in is well performed, every crack and crevice will be compactly filled with fine pulverized earth, and the trees will keep a long time as well as in the nursery rows. If badly heeled-in during autumn and left till spring, the trees are nearly if not wholly ruined by freezing and drying combined."

ERRORS IN GROUPING.—At least one person in three of those who plant trees in groups or belts for ornamental purposes commits errors in consequence of not taking "one long look ahead." Probably in many instances mistakes are made in consequence of the ignorance of the parties directing the planting of the trees, as they judge of the future size from the specimens in hand, the largest being selected for centre of groups or back-ground of belts. A few years, however, is only required to develop and show errors, and the tall, slim *Arbor Vitæ* or *Irish Juniper* of to-day is soon overtopped by the stocky *Norway* or *Hemlock Spruce*. Planting ornamental trees is a work requiring some forethought, as it is not altogether for the present immediate effect that it is done, but for time far distant, and one needs to have the future form, size, and general appearance of the trees in his mind's eye at the beginning, if he would avoid making blunders that never can be corrected. It requires a practical and intimate acquaintance with all the trees used in forming groups, not only as they appear in their native forest, as well as when cultivated, for some show the effects of culture differently than others.

Apiary.

The Largest Bee-Hive in the World.

In Los Angeles County, on the eastern slope of the San Francisco range of mountains, and in the immediate vicinity of the Leaming Petroleum Company's oil region, there is the most wonderful collection of wild honey in existence. The hive is located in a rift, which penetrates the rock to the depth of probably 160 feet. The orifice is 30 feet long and 17 feet wide; four passages. This rift was discovered to be the abiding place of a swarm of bees, that is represented as coming out in a nearly solid column one foot in diameter. Certain parties have endeavoured to descend to the immense store of honey collected by these bees, but were invariably driven back, and one man lost his life in the effort. Others have, at the expense of much labour and money, built a scaffold 125 feet high, in the hope of reaching a place whence they could run a drift into the rock, and extract its well-hoarded sweets, but finally ceased their work. Within four years the bees have added not less than fifteen feet of depth to their treasure, as ascertained by a actual measurement, and it is thought that at the present time there can not be less than eight or ten tons of honey in the rock. A man named B. Brophy lives in a cabin not far from the spot, and obtained from the melting of the honey by the sun's heat enough for his family requirements. All through that region immense stores of wild honey are found in trees, in the rocks, nearly every place where its industrious manufacturers think—for bees seem to think—that it will be secure. They consume a very small proportion, as the climate enables them to keep up operations nearly every day in the year, and flowers of some sort are always in bloom. It must be a very severe season indeed when the little fellows are not seen abroad in vast numbers, busily engaged in their mellifluous work.

The Profits of Bee-Keeping.

The profits of bee culture, like all other kinds of business, must depend upon the knowledge and attention given to the subject, the price of honey, and other contingencies. It is a kind of business requiring a good deal of patience and a thorough knowledge of the habits and wants of the bee. It is but now and then we find a person competent that will give his bees attention enough to realize any profits. The bee is universally neglected and left to take care of himself, and hence, as should be expected, no profit is realized. During the past winter, hundreds of stocks of bees have perished, simply for want of trouble to remove them from their summer stands to more comfortable winter quarters. Men who can't afford to do even this little work for their bees, have no reason to expect profits from keeping them. Capt. Hetherington, of Cherry Valley, sent to market in one season 20,000 pounds of honey, which sold for \$7,000.

According to the census of 1850, there were produced in the United States and Territories, 14,858,790 pounds of beeswax and honey, while that of 1860 was 1,357,864 pounds of beeswax, and 25,053,991 pounds of honey, showing an increase of about 77½ per cent.

Mr. Quinby, in his circular for 1872, states that Mr. Hildreth, of Herkimer, obtained in 1861, from thirteen hives, 1,500 pounds of box honey, and doubled his original stocks.

He also states that Mr. Underhill, of St. Johnsville, obtained from fifteen colonies, six swarms, 1,050 pounds of box honey, and over 600 pounds of extracted honey.

In his own apiary, he says, during the past year (1871), of those swarms that he took the trouble to weigh, one filled forty boxes weighing five pounds each (200 pounds); another, thirty boxes. "From one we extracted 220 pounds. Very many others furnished as much more, but were not weighed."

In 1870 one hive furnished 361 pounds of extracted honey. The yield in one week, the last of June, was 83 pounds.

In my own apiary I have had up to this time only one common box hive; during the last year I received from eight hives in the spring—and two of them not strong—eight new swarms and 550 pounds of box honey.

But others may keep bees and give them no attention, and their profits will be very small, if they do not lose their entire investment. Bee culture, well managed, is a good business; but if left to take care of itself, as is generally done, it had better be left alone. —S. P. Landers, in *Western Rural*.

The Canada Farmer.

TORONTO, CANADA, DEC. 15, 1872.

TO OUR READERS.

This number of THE CANADA FARMER has been delayed beyond the regular day of publication in order that we might be able to announce in it our programme for 1873. A change, in regard to the terms of publication, has become necessary, and we were desirous of stating in the closing number for 1872 what that change would be.

When THE CANADA FARMER was first issued in 1864, the price was \$1 *per annum*; the circulation was very large; the Government passed it through the Post Office free of postage; and the results to the publishers were fairly remunerative.

Urged by the officers of many Agricultural Societies to make to these institutions such a deduction from the regular price of subscription as would enable them to supply all their members with a copy of THE FARMER free—the price to them was reduced to little more than the cost of production. A very large proportion of our edition for some years past has been supplied to Societies and Clubs at these low rates—but believing that the paper was exercising a highly beneficial influence on the agriculture of the country, we refrained from raising the price, and continued to supply it at the old rate of one dollar a year, *free of postage*.

This, however, can no longer be done. The Government have withdrawn their boon of free postage in favour of Agricultural publications—and we have now to pay out of the small sum we receive for each annual volume, twenty-four cents of postage. Moreover, the price of paper, and of all other printing materials, has gone up largely of late, and the cost of labour of all kinds has greatly advanced.

Under these circumstances, a change *had to be made*; and that change we have resolved to make in the coming month of January. We intend to bring out a new series of THE CANADA FARMER on a higher and more efficient scale than has yet been attempted in Canada. We are now organizing a complete staff of assistants in all the various departments of practical farming and gardening, and have already succeeded in adding to our list several able and efficient agricultural writers. A number of marked improvements will be carried out in the new series; and wood-cuts in illustration of the letter press articles will be freely given. The mechanical execution of the paper will be first-class; it will be published twice in each month, and the subscription rate will be one dollar and fifty cents per annum.

A sample copy of the first number of the new issue will be sent to all the subscribers for 1872; and we hope not only to receive renewals of their subscriptions, but their friendly aid in extending our circulation.

The Late Epizootic Amongst Horses.

This rather alarming disease has now nearly disappeared from this Province, and although nearly every horse was attacked to a greater or less extent, the percentage of fatal cases was exceedingly small.

A number of horses, however, are yet suffering from the effects of the malady, generally the result of exposure or hard work.

One common sequel is œdematous or dropsical swellings of the legs and other parts of the body, and these symptoms generally result from internal complications, as disease of the liver, kidneys, and lungs.

In most of the cases the liver is most severely affected.

The swelling first appears on the inside of the thighs, causing great difficulty in moving, and a casual observer is very apt to think that the horse has been severely sprained. The swelling continues to extend downwards, and the fore-legs soon become similarly affected, the pulse is quickened, and the membrane of the eye has a peculiar yellowish red tinge indicative of disorder of the liver. The horse seldom lies down owing to the stiffness and pain of his limbs; if he does go down, he is generally unable to rise without assistance.

In still more serious cases the head becomes swollen, especially the lips and nostrils, the breathing is increased, the swelling in some instances is so great that the animal is scarcely able to breathe, the eyelids become swollen and everted, and mottled discharges from the nose and eyes, rendering the poor sufferer a most pitiable looking object. In several cases that proved fatal, we made a careful post mortem examination, and found the liver to be completely disorganized; effusion had also taken place between the nervous and muscular coats of the intestines.

In all cases, these dropsical swellings, following upon an attack of catarrhal fever, however mild, are dangerous symptoms, and whenever they appear the horse should be laid off work, and carefully attended to.

When the head is swollen, hot fomentations should be diligently applied for three or four hours at a time, and the head must be thoroughly dried and kept warm; the food must be such as is easily digested, and when the lips are severely affected he can only take gruel. As to the medicinal remedies the iodide of potassium may be given in doses of one drachm morning and night. And rubbing and careful bandaging of the legs are also useful, and, if necessary, the strength must be supported by the careful use of stimulants, as wine, whiskey or ale.

As soon as the more acute symptoms are abated, it is advisable to give walking exercise twice a day, and when he is so far recovered as to be able to be put to work, it is essentially necessary that he should not be exposed to severe weather.

Too Many Apples.

It is very amusing to read the wise remarks with which we are favored just now on the subject of the apple crop. It is urged that there are too many apples grown, that the market is over-stocked with apples, that they do not pay. Let us reflect a little.

Open half a dozen barrels at random in the market and examine them. Do they not at once tell that in a certain sense the cry is quite true, there are too many apples grown, altogether too many on one tree. As a necessary consequence they are not perfectly developed, not well colored nor well flavored. They are second rate. Now it is true there are too many second rate apples thrown on the market, and a very common source of this evil is the want of care on the part of the fruit growers during the early part of the season while the fruit is yet small. It is important that an apple tree should not be overloaded with fruit if we would secure perfect development in size and flavor. Hence it is necessary that the fruit grower should examine his trees after the apples are set and thin out the crowded clusters, taking away the smaller and imperfect samples. The examination should be repeated after an interval of two or three weeks, removing especially those that are affected with the codlin-worm,

and taking care that these insects be all destroyed.

It will be urged by many that all this may be very well, but it takes too much labor, that the other cares of the farm leave no time for this work in the orchard. Probably this is true. If the cultivator relies on his farm crops for his income, he is quite right in giving them the prominent place in his thoughts and attentions. But if he expects to make fruit the main source of his support he should give that the first place and grow his farm crops on such a scale that he can afford to make them secondary.

We conclude then that it is time that our cultivator make a choice between the farm and the orchard, and devote their energies chiefly to one or the other. There is abundant opportunity for success, in a business point of view, for the man who has a love for fruit growing. First-rate apples, first-rate pears, first-rate anything will command a remunerating price. We often hear of the professions being over-crowded, too many lawyers, too many doctors, too many ministers. Yes, there are too many far too many poor lawyers, poor doctors and poor preachers, but there is always need of those who are first-rate.—So there is need of first-rate fruit-growers, who will take the pains to produce a first-rate article, and send it to market in first-rate order. Such fruit will always command a first-rate price.

Queen Victoria's Apples.

We clip the following paragraph from the *American Rural Home*.—"Queen Victoria was so much pleased with the five barrels of apples presented to her last fall by some Michigan fruit-growers, that she this year sent an order to that State for fourteen times as many for winter use."

What must our Queen send to the United States for her apples? Send orders to Michigan for fruit that must be transported for a thousand miles through Canadian territory in order to reach her Majesty's tables? Have our Canadian fruit growers never thought of Queen Victoria when gathering their stores of beautiful apples? And it never occur to them that a present of choice fruit sent across the Atlantic would be a beautiful expression of our esteem, as well as a fitting mode of making known to Her Majesty the rare productions of her Canadian Dominion? Better apples are grown in Canada than in Michigan—apples of finer texture and higher flavor; and it is not creditable to us that our American neighbours have set us so sharp a lesson in kindly courtesy to our Sovereign.

Beet Root and Beet Root Sugar.

We have received numerous applications for information on this most interesting and important subject, and such as show that the question has taken a firm hold on the mind

of the Canadian public. To all such we say in reply,—that the information required is given in full in the "CANADA FARMER" for the year 1872, and that all subscribers to that publication, will find not only a great deal of information on beet root spread over all the numbers, but more particularly in the number for the month of June 1872, and subsequently, where the whole question is treated in the fullest possible manner. To those who wish to correspond on the subject, letters addressed to E. L. Cull, Esq., Toronto, and enclosing six cents in stamps (i.e. 3 cents for return postage and three cents for the postage of printed paper) will receive a reply to their queries.

We shall continue to afford information on beet sugar in the columns of the *Weekly Globe* and the *CANADA FARMER*, and shall keep our readers well posted on all points, as the subject is now fully treated on by the English and American press.

International Fruit Show in 1873.

It is proposed to hold an International Fruit Show at Manchester, England, in 1873. The *Gardener's Magazine*, commenting upon it, objects to the term *International* as too large, and says that the continental contributions amount to nothing practically, and that as to the rest of the world, all that can be ordinarily hoped for from it is an occasional basket of apples from Nova Scotia.

We beg leave to ask why our own Province of Ontario might not be represented on such an occasion? Why should not Government send out to these exhibitions a sample of the fruits grown here? There could be no better means of making known to the public at home the beautiful products of our soil and climate.

We believe such a display as might be made with our fruits would be fully equal to the efforts of half-a-dozen emigrant agents.

Cutting Hay or Straw for Horses.

One of the most clever and experienced veterinary surgeons once told me "never to cut hay or straw for horses shorter than one inch long." I had been using such food, for my horses, and they had been much troubled with colic, or griping pains in the stomach and bowels. I could not imagine why horses that had always previously been free from this tendency, should now be so liable to its return, on such small provocation.

I tried all sorts of things as a remedy, and finally called in the doctor. He inquired how I fed them, and on hearing that I used cut feed, and that I was in the habit of cutting it very short—about

a quarter to half an inch in length—he at once condemned the practice as causing the evil complained of. His theory was, “that horses, when hungry, and being fed with short cut hay or straw, in which meal damped had been sprinkled, did not stop to grind the chaff thoroughly, and, consequently, it passed into the stomach without being properly masticated, and in this state proved very irritating to the stomach and bowels.”

I discontinued the practice of short cutting, and the fits of colic soon became a rare occurrence in our stable. There is no doubt whatever of the soundness of the theory—and indeed, on any account, chaff ought not to be swallowed without being ground entirely into a state fit for digestion. This evil is not felt with ruminating animals. In their case, the food, after being swallowed, is returned by the stomach and again undergoes mastication; and the finer it is cut, the less work has the ox or cow to do in reducing it to a state fit for digestion. Any one who has examined the cud of a ruminant just previous to swallowing a second time, will at once appreciate the difference. A hungry ox will eat hay twice as fast as a horse; in fact, it has often been a source of wonder to me, when looking on and observing how these animals “tear in the hay,” and how little chewing it gets before swallowing, why they were not often choked with such unmanageable mouthfuls; but I never had one who so suffered, although, like all farmers who feed roots to cattle, I have often had them choked with turnips. C.

Phosphate of Lime, and the Phosphate District.

Amongst other minerals, this most valuable manure occurs in Canada in immense deposits. All through the townships of Burgess and Crosby, as well as a considerable portion of the counties of Leeds, Lanark and Frontenac, are found large and very valuable beds of the mineral. Near Brockville, there have been established sulphuric acid works, and considerable quantities of acid have been manufactured.

Some English companies have lately had their attention turned to utilizing the phosphate mines, and capitalists or their representatives were plentiful enough during last autumn inspecting localities and testing mines. Large quantities of phosphate, averaging from 80 to 90 per cent. of pure mineral, are often met with, and some thousands of tons were shipped last year and the year before to England, Scotland and Germany.

It seems extraordinary that our worn soils will not pay for a liberal application of this perfect manure, when it pays handsomely for England and Germany to send here for

it. No doubt our enterprising population will soon awaken to the absurdity of this anomaly; but at present we hear very little about any being used here, even on the spot where it occurs, and can be dug often on the very farm most needing it as manure. It is almost as hard to reconcile this want of enterprise to the fact, as it is to imagine how the old settlers have spent forty or fifty years in Canada, and have during that time been burning tallow candles whilst there were an enormous deposit of mineral oil easily obtained and quite neglected, almost at our very doors. Now, and at this day, for a man to talk of rejecting coal oil and returning once more to tallow candles would seem like gratuitously qualifying himself for the Lunatic Asylum. So we trust it may soon prove with phosphate of lime. Our farmers want it badly enough, and we have close by these beds enormous deposits of Iron Pyrites that will readily yield the sulphuric acid required to reduce the phosphate of lime into a fit and proper state for a lasting and most active manure.

The formation of these phosphate beds are in several cases most advantageously situated for being easily mined and developed. Large horizontal layers of several feet in thickness are often found. To get at these layers often only requires stripping the superincumbent earth away, and as these layers occasionally occur on elevated situations, the earth so to be removed can often be thrown down inclines at a nominal cost. Where the vein or seams run vertically or at acute angles into the earth, the labour, of course, is much greater to get it to the surface and keep down the water.

Parties are now advertising that they will purchase any quantity of pure phosphate for shipment to Europe. But we should much rather hear of capitalists forming companies to work and manufacture it here fit for farmers' use. At present, the pyrites from which England derives a large portion of her sulphuric acid is brought from Spain, and a very large trade in it has been done; and when England can bring pyrites from Spain to make acid, and phosphate from Canada to use with it to make manure surely we, who have both, almost on the farm, and certainly in the same county, can manufacture and use the same articles at a fair profit to all concerned, producer and consumer. VECTIS.

STOTT'S MONARCH RHUBARB.—Shirley Hibberd says that any one who wants a rhubarb that makes leaves as big as a dining-table, or stems as thick as a cedar tree, that rise as high as a tall human dwarf, should order Stott's Monarch at once. After being at sea for three years as to the whereabouts of this wonderful rhubarb, he has at last discovered that it is to be obtained of Stuart & Mein, of Kelso, North Britain.

Drawing Water by Pump from a long Distance, and Unseen Poisons.

Few people are aware, that if the farm well happens to be situated some distance from the house, there is little or no difficulty in bringing the water into a more convenient position. This may be done by attaching the pump to the end of a long wrought iron pipe, that may be readily placed below the influence of frost, and the end at the well turned downward into the water, and under its surface sufficiently deep to meet all future demands. All that is requisite is that the pump should bear a certain proportion, as to size, to the pipe that affords the supply. If this proportion is not maintained the pump will not work so well; a one inch wrought iron gas pipe will cost about eight cents a foot, and will last a life time, and the water will always be good. Pine logs will do as well, but they are rarely perfectly air tight at the joints, consequently the pump will often be out of order.

The diameter and stroke of such a pump will work to good advantage with so small a pipe, should not exceed $3\frac{1}{2}$ diameter, by 9 inch stroke. Even this will “pump hard” through so small a supply pipe; but by being careful not to work the handle too quickly, there will be little inconvenience felt on this head, whereas there will be a great convenience in the water being brought into the kitchen, instead of the females of a family being compelled to go perhaps fifty yards in bad weather to fetch it. Above all things, avoid lead pipes; almost all water forms, with lead, carbonate of lead, a most insidious and deadly poison always accumulating in the system, and produces diseases of a very severe type.

Zinc pails are also very unwholesome for drinking water purposes. Oxide of zinc is formed, and this also is a deadly poison.

Nothing is so safe as wood or tin. Galvanized iron is iron covered with zinc peculiarly applied, and the zinc is intended to preserve the iron from rusting, by the “rusting” or oxidation of the zinc, during this process, the oxide of zinc is often formed in quantities sufficient to injure health in a very sensible degree.

When galvanized pails are used for dairy purposes, the milk contained therein gets somewhat sour; lactate of zinc is formed, which is also very unwholesome. Many families owe their bad health to some such influence, often the more to be dreaded because it is unknown and unseen, but its effects are gradually but surely developed nevertheless.

I mention a one inch pipe, as it is so much cheaper than a larger size, but of course a one and a half or two inch pipe would almost always be preferable, except for very small pumps, and a similarly contracted supply.

VECTIS.

Making Sluggish Colts Free.

One of the best horsemen I ever had to manage colts, says, "that if you have a dull sluggish colt," who will not move from the crack of the whip, or attempt to "show himself," he may be quite permanently cured, and thoroughly roused up, by keeping a strap hung up just within the stable door, and each time the person in charge (or, better still, the owner) goes into the stable, he takes down the strap, and gives a smart cut on the horse's rump or haunch, accompanying the sounding blow with a lively halloo or rousing sound, causing the colt to fly from him up towards the manger. If this continually done, and the horse's nervous system thoroughly and constantly roused into action, the animal will shortly grow into this active state as his normal condition, instead of the former mulish, slow, miserable, stubborn, condition, as originally developed and no doubt whatever this system is the true one. It is all nonsense those fine ideas about a horse having strong affections, sufficiently so as to induce him to do from love (what I, and every one who has had any experience in horses perfectly well know to be necessary in horse management), viz., to succumb to the mental bodily power of his master, and do what he is told, not exactly from fear alone, as the obedience will be partly habit, but certainly more from fear than love. A horse is naturally a stupid animal, and has far more sense, and better reasoning faculties, but his nature is slower and less spirited, therefore but little can be done to rouse him.

Not so with the horse. There is no need of brutality. I am never cruel to any horse, there is no need of harshness or violence, but the driver "must be master," and moreover, must have such mental and bodily control over the horse, that when spoken to, he instinctively obeys, partly from a fine generous spirit, but most from habit and some fear. Hence the success of the sudden electrifying effect of strap, when applied without any warning, on the horse's nervous system. He has no time to gather his strength and will together to oppose, and instinctively bounds forward in obedience to the shout and harmless although sounding blow with the strap.

In my experience of "horse nature," gathered during forty years constant use of them, I have often found some drivers who could do twice as much with their team, when in a "bad place" as those who preceded, or succeeded them as drivers; the secret always lay in being master of the animals—master without brutality or hard unnecessary severity. A good teamster never willingly ill uses his team, or is brutal to them. He never thumps them over the head, or whips them unmercifully. But he is decidedly master, and when he speaks to them, they well know he expects them to do their utmost.

Another and most necessary thing for a driver to know is "when the horses have tried their best," and whether they have the power to move the load or not. Experienced horsemen know the moment they look at a loaded waggon in a bad place, whether the power of the horses will move it out or not, and they at once resort to other mechanical means to assist, rather than whip their teams into furious and injurious exertion, to accomplish the end in view. If any driver who had charge of my team persistently continued to try to compel them to extricate a heavy load without extra help; after the horses had given one fair hearty trial, I certainly should take the reins from his hands, as quite untrustworthy the control of a valuable team.

Horses wear out quite quick enough without their depreciation being accelerated by bad usage.

A team of first-class horses will certainly cost from three hundred to four hundred dollars, and as they are not able to do much until four years old, and are usually worn quite out (with some exceptions) at about fourteen, including average deaths and accidents, it follows there is an annual depreciation of from thirty to forty dollars besides interest on investment in the purchase. This is quite costly enough without adding to it and accelerating it by ill treatment, which is never necessary and always injurious.

C.

"Better to Wear Out than Rust Out."

The heading of this article was suggested by an old hard-working Yorkshire farmer, a man who has done well in Canada, as he had also thriven in England, and who came here for the sake of his children. His family was a large one, twelve all told, seven sons and five daughters. Since he emigrated he had always made "things pay," and at his time of life,—he being upwards of seventy—most men would seek rest and ease. Not so with our old friend, however; he was as active and energetic as ever.

I asked him one day "when he meant to give up work, and live in ease the rest of his days?" His answer showed a good knowledge of human nature, and at the same time the old indomitable energy, that had attended him through life.

"Why, he replied, "should I seek rest and ease," as you call it. My life has been one scene of active industry. Idleness and ease are no rest or recreation to me. Sunday is the longest day in the seven to my feelings; and although I try to keep it holy, yet I often think the 313 days of work in each year, of example and habit of hard driving industry, proves too much for the 52 Sunday's habit of idleness, so that my nature seems more pleased by work than rest."

"In fact," the old man said, "I have for so many years encouraged the habit of continued

exertion, and have had so few rests to break the force of that habit, that I cannot now abandon the more confirmed one of work for that of rest."

"I could," he continued, "no doubt live well enough without work, but my days would be dreary and long, and instead of watching the sun's declining rays with regret that evening was drawing near, I should be watching and wishing for the sun to set and the day to be over. Then again, wanting my usual exercise, my health would probably fail, and I should 'age' faster with rest than with work."

"I have often noticed retired mercantile people, who have passed a busy active life in acquiring a competence. When that time comes, and the means of living at ease are plentiful, they are never half as happy, or enjoy as good health under these easy circumstances, as they did under the old and accustomed system of work. Many in fact return to business from pure inability to be longer idle. But with this change there is uncomfortableness and error in attaining the end sought after. These men have for some time, often for years, been out of the 'groove' in which they had ran so long previously, that business, when returned to, is almost as strange to them as idleness was when they left off work. Old friends are (from change of circumstances) estranged and many things are altered, and as they cannot very well again drop exactly into the old ways, the return to business is generally a failure." "So, continued my old friend, I have long come to the conclusion it is far better for those who have all their lives been engaged in hard work for themselves, and on their own account, to finish their time by 'wearing out' at work instead of 'rusting out' in idleness."

C.

Short-Horn Interests.

Not in the history of the country, has so many Short-horn cattle changed hands in any one year, as during the year now drawing to a close. Yet, notwithstanding the low prices of beef and pork, as compared with the average ruling prices that have prevailed since the influences of war inflation commenced, the prices obtained for about seven hundred head that have been sold at public auction, during the past six months, mainly in the States, (a few of those enumerated having been sold in Canada,) the bulk of the sales having been made near the Mississippi river and in Kentucky, have been remunerative, and both demand and prices point unmistakably to the fact that Short-horns are wanted. Not by fancy moneyed men, as has many times been declared by men who have waited for prices to recede, but by an increasing population, the increase all the time keeping ahead of "the increase in thorough-bred stock of every desirable and useful sort."

The broad acres of Illinois, Iowa and Missouri, have opened the way for a large and rapid increase of cattle, both thorough-bred and ordinary, and no man who owns land worth over \$10 or \$15 an acre, need be told that self-interest demands that he feed his grain and grass to such beasts as will pay a quick and liberal return for the provender consumed; and while thousands of farmers in the States named are content with unimproved cattle, the farmers of Kansas, and the new regions beyond, are shipping, by every available avenue, herds of thorough-bred Short-horns, as well as collections of other improved farm stock, and Kansas, to-day, occupies a position far in advance of that occupied by Iowa or Illinois when in the same stage of progress, and having a corresponding population.

These reflections are called out by the results of several sales that have transpired during this month. The sales have been made late in the season, just upon the eve of winter, hence unseasonable; the cattle having generally been upon poor pastures, feed curtailed by drouth, this having prevailed in Kentucky during the season—and although the prices obtained were good, for thin cattle, still if sold earlier in the season, the figures would undoubtedly have been fifty per cent. higher.—*Chicago Live Stock Journal.*

LARGE ONIONS.—At the Banbury Horticultural Exhibition Mr. W. Munton took the first prize for Onions in the "Sweepstakes," open to all England. His twelve onions weighed fifteen pounds, and measured on an average fifteen and a quarter inches in circumference.

DRIED FRUIT.—A fruit-drying establishment has been erected at Fowler, Adams Co., Ill. The building is said to be 36 by 74 feet, four stories and a basement, with three evaporators, and capable of drying from four to five hundred bushels of fruit or vegetables per day.

Prof. Agassiz stated a fact which breeders of animals should never forget or undervalue, when he said, no offspring is simply the offspring of its father, or mother. It is at the same time the offspring of grandfather and grandmother on both sides. Without touching ground at all debatable, he might have asserted this dependence of offspring or liability to reproduce family characteristics extends much farther up the ancestral Hence into the lineance of thorough-breeding.

APPLES AND PEARS IN IRELAND.—At the great Irish Fruit Show in Dublin, the apples which, as a single dish of any one variety, bore off the palm, were Cox's Orange Pippin, while Ribston Pippin took the second and third prizes. The six varieties of dessert pears which re-

ceived the first prize were Beurre Bosc, Marie Louise, Flemish Beauty, No Plus Meuris, Duchess d'Angouleme, and Louise Bonno. The best plate of any one variety was of the Bartlett.

Fertility of Water.—The following is an extract from the speech of the Hon. Robert B. Roosevelt, in the House of Representatives, May 13th, 1872, comparing fish culture with agriculture:

The relative fertility of the water and the land is altogether in favour of the water. An acre of land will produce corn enough to support a human being, but an acre of water will support several persons, and could readily be made, with proper aid, to sustain the lives of many more. The former requires manuring, working, planting and harvesting; the latter merely requires harvesting; and that, where the fish are sufficiently abundant, is hardly labour at all.

While the yield from the land is reasonably large, the profit is exceedingly small. The field must be plowed and harrowed and fertilized; the corn must be planted; it must be plowed again; and still again, must be hoed; and at last the ears must be stripped, husked and ground. What is the net result of this compared with the natural increase of fish growth in abundance, almost without effort, finding their own food, and finally taken in some net which does its fishing while its owner is sleeping?

SUNDAY HARVESTING.—What is the exact point at which to draw the line against Sunday labour? A member of the Established Church Synod of Aberdeen, more anxious than "sound" or orthodox, we fear, has had the courage to ask the Synod, in the presence of divines no less grave than Dr. Pirie, "whether in the remarkable position of matters now existing it would be wrong for a minister to let it be known to his people that the crops might be gathered in on the Sabbath, and that no fault would be found were this done?" This practical pillar of the Kirk was provided with some rather musty arguments intended to establish an analogy between securing crops on a fine Sunday in wet seasons and hauling a transgressing ox out of the pit; but a rev. doctor would admit nothing short of "spate" as an analogous necessity to the imprisoned ox; should a flood come and threaten to carry away the stocks, then it might be a good work even on Sunday to save them. However, the Synod took care not to put on record its sanction to Sunday work under possibilities of any kind. Dr Pirie drew the very fine distinction that while working on Sunday might be justified, it would not do for the Synod in any way to sanction such work. The good people in the north must therefore wait till the next harvest "spate" to learn what may their privileges and duties in this matter, both as regards themselves, their property, and the Kirk.—*Liverpool Albion.*

Agricultural Intelligence.

American Convention of Short-Horn Breeders.

This important convention was held at Indianapolis, on the 28th Nov., and was largely attended by prominent agriculturists from all sections of the continent.

A permanent society was formed, under the title of "The American Association of breeders of Short-horns," and the object of the Association was declared to be "for the purpose of encouraging and promoting this important interest, and to increase the average excellence; and provide for the preservation and dissemination in its purity of this matchless blood for the improvement of American cattle."

The following constitution was duly adopted:

ARTICLE 1. This association shall be known as the American Association of Breeders of Short-Horns.

ART. 2. The officers of the association shall be a President, two Vice-Presidents, Treasurer, and Secretary, who, with one Director from each State, and organized society of the United States and of the Provinces of Canada, that may be represented by membership in this Association, shall constitute a Board of Directors, for the management of the affairs of the Association, subject to this constitution, and such rules and regulations as the Association may from time to time adopt.

ART. 3. Any person engaged in breeding short-horn cattle in the States, Territories, and Provinces before mentioned, may become a member of the Association by signing the constitution and paying the sum of two dollars, and shall be liable to pay such annual sums thereafter, not exceeding \$2, as the Board of Directors shall prescribe; but all Agricultural Colleges or Associations breeding short-horn cattle shall be entitled to one membership.

ART. 4. The Officers and Directors first chosen shall be elected for the term of two years, and until their successors are elected; and the membership in each State, Territory, and Province not represented at the first meeting, may, by sending their names and fees aforesaid to the Treasurer, designate a Director for such State, Territory, or Province, whose term of office shall expire at the same time as other members of the Board. The terms of officers subsequently elected shall be two years.

ART. 5. The Board of Directors, of whom nine shall constitute a quorum, shall have power to call meetings of the Association at such times and places as they may deem necessary, but shall be required to call meetings at the time of the expiration of the terms of the officers, and shall also have authority to provide such rules and regulations as they may deem necessary for the protection of the public against frauds in pedigrees, and for the suppression of parties who may be guilty of the same. They shall likewise have power to provide for the publication of any transaction of the Association, and to provide means for the payment of all expenses that may be incurred.

ART. 6. This constitution may be amended at any regular meeting, called for the election of officers, by a majority of two thirds of the members present.

This constitution having been formally adopted, the following gentlemen were chosen as the officers of the Association:

President—Dr. A. C. Stevenson of Indiana.

Vice-Presidents—1st Wm. Wallace, of Kentucky; 2nd, Hon. David Christie, of Ontario.

Secretary—B. H. Campbell, Batavia, N. Y.

Treasurer—John G. Dun, of Ohio.

Directors—S. R. Seymour, Cincinnati, Ohio; W. R. Duncan, of Fox Lake, Illinois; Edward G. Bedford, of Paris, Kentucky; Dr. Maxby Miles, Lansing, Michigan; George Murray, Racine, Wisconsin; Claude Matthews, Indiana; Samuel Campbell, N. Y. Mills, New York; John H. Brown, Worthington, Iowa; C. T. Quisenberry, Missouri; Charles E. Coffin, Maryland; Joseph F. Massachusetts; Stephen White, Ontario; M. H. Cochrane, Quebec; W. S. King, Minnesota; Mark S. Cokerill, Tennessee; Geo. W. Glick, Atchison, Kansas; E. L. Emery, Omaha, Nebraska; Warren Percival, Maine; D. S. Pratt, Vermont.

The first subject taken up for discussion by the Convention, when duly organized, was the practice of over-feeding cattle for show purposes, and the following resolution was finally adopted upon it:—

Resolved, That in the estimation of this convention, it is not only necessary in successfully breeding Short-horn cattle that we should see the animals of that form, pedigree, &c., but that they should be well fed and cared for. At the same time, we look upon the practice of keeping up cattle without exercise, and feeding them to near their full capacity, for show purposes, or sale, as injurious to their health and usefulness as breeders.

The next subject taken up for discussion was the much discussed demand for the improvement of the Herd-book. After a long and spirited discussion, the following conclusions were arrived at:—

Resolved, That for the better management of the American Herd Book in the future, the Committee beg leave to make the following recommendations:—

Resolved, That in the record, the name of both breeder and owner shall be given, together with the date of birth and the colour of the animal.

Resolved, That the ancestors of animals shall be traced on both sides to imported animals or to those heretofore named in the American Herd Book; with correct pedigrees, before they can be entitled to registry.

Resolved, Family names should belong to breeders first claiming that name in some agricultural paper of the United States, or in the American Herd Book.

Resolved, That the person under whose direction the animals are coupled should be recognized as the breeder of their produce.

Resolved, That a committee shall be appointed by the President and Directors of this Association, whose duty it shall be to examine all pedigrees claimed by any member of this Association, as errors and forgeries, and when decided to be wrong, that the fact be published in a chapter of errors, to be added to each succeeding volume of the Herd Book.

Resolved, That Lewis F. Allen be requested to continue the publication of the American Short-horn Herd Book, in accordance with the above recommendations.

A correspondent, who was present at the convention, sends us the following sketch of the discussion on these resolutions:—

A body of gentlemen in the convention, tried to induce the convention to narrow very much the sphere of registration, but they failed signally. Expressing great zeal for purity of pedigree, and the protection of investment men, the result of their proposition, if adopted, would have been to confine the Herd Book to a very few herds. Had they succeeded, a large class of animals heretofore admitted to record would have been excluded, some of those gentlemen had themselves sold to Western men the very cattle which they now tried to exclude. The Hon. D. Christie took the ground that in America we could not adopt a higher standard than in England, where the rule was to admit animals having four well established crosses, by really well bred bulls, and quoted the English Herd book, the catalogues of many of the first English breeders, and Mr. Carr's book to show this. He also showed that the resolution, as it was worded, would admit some tribes in Kentucky and elsewhere, which had not in their inception any crosses at all, and merely because the animal had been imported, would be recorded in the American Herd book. Take, for instance, the "Dorsetia" tribe of Mr. Geo. G. Bedford, originating in Britannia—a cow imported from England, but without a single line of pedigree. She may have been a well-bred cow, and she may have been a Long-horn, or anything else, so far as the record goes. Mr. Christie further contended that high grades, as some gentlemen styled them, were really better bred animals and far more worthy of record. In reply to the grade theory, Mr. Bates's catalogue was quoted to prove that "Oxford 2nd" was only a 3 cross cow; and that "Duke of Oxford 2nd," whose blood entered into the pedigrees of all the Gunter, Thorndale, Geneva, and Airdrie Duchesses, was only a four-cross bull. Furthermore, that "Baron of Oxford," the sire of some of the highest-priced animals of Bates' blood, was only a six-cross bull. These arguments could not be answered, and one of the innovators, when pressed, actually called Baron of Oxford a grade bull! The convention, by a large majority, decided against the exclusive proposition.

A committee, consisting of Dun, of Ohio; Duncan, Illinois; Kinnard, Kentucky; Quisenberry, Missouri, and the Hon. D. Christie, were appointed a court of appeal, with whom Mr. Allen is to consult, in cases of spurious or disputed pedigrees.

You will see a report of the proceedings in a pamphlet which has been ordered to be published.

The following definition of the grades of stock, introduced by Prof. Miles, was

adopted by the Convention:—Pure bred, full bred, thorough bred, as animals of a distinct and well defined breed, without any admixture of other blood. Cross bred, animals produced by breeding together distinct breeds. Grades, as the product between a pure bred and a "native." High grades, an animal of mixed blood, in which the blood of a pure breed largely predominates.

After the adjournment of the Convention, the President and Board of Directors, as provided by the constitution, held a meeting and appointed W. R. Duncan, of Wisconsin; Robert G. Dun, Ohio; the Hon. David Christie, Canada; Ches. E. Talbot, Missouri; and James C. Kennedy, Kentucky, a committee to investigate pedigrees. On motion, the Board fixed the first Wednesday in December 1874, as the time, and Cincinnati, Ohio, as the place for holding the next National Convention of Short-Horn Breeders.

United States Swine-Breeders' Association.

In accordance with arrangements made at a meeting of this association, held in New York, May 14th, the adjourned meeting met at Indianapolis, Ind., Nov. 20th, at the rooms of the Indiana State Board of Agriculture.

The committee appointed at the May meeting to prepare work for the convention and to name committees to prepare reports upon the history, characteristics, and a scale of points for the respective breeds of swine, and upon the question of what constitutes thorough-bred swine, had named committees upon the following subjects and points:

1. What constitutes thorough-bred Swine?
2. On Berkshires.
3. "Improved Cheshires, or Jefferson Co."
4. Chester Whites.
5. Essex.
6. Neapolitan.
7. Magic, or Poland-China.
8. New Jersey Reds.
9. Suffolks, and other small White English breeds.
10. Yorkshires, and other large White English breeds.
11. Victorias.

THE BERKSHIRE.

The following report made by the chairman of the committee, Mr. A. B. Allen, of New York, embraces the history of this breed, to which is appended the report of the committee of the convention to whom it was referred, giving the characteristics of this breed.

1. The committee appointed to report on the above respectfully submit: That from the best information they have been able to obtain on this important subject, they find that swine of various colours, forms, and sizes have existed in Berkshire, England, from time immemorial. That family, however, which was the foundation of the present improved breed, was of a sandy or buff colour, about equally spotted with black; was of a large size, a slow feeder, and did not fully mature till two and a half to three years old. But as such it was ever highly esteemed for the greater proportion of lean and fat in its meat, and for the superior

weight of its hams and shoulders; thus rendering the whole carcass peculiarly well fitted for smoking, for which purpose it was said to excel all other English breeds.

2. Superiority of Berkshire Swine for Smoked Meat.—In one respect they may be said to excel all other breeds with which the committee are acquainted, and that is in the superior weight and quality of their hams and shoulders; these yielding a much greater proportion of tender, lean, juicy, well-marbled meat, in comparison to the fat than can be found elsewhere. The sides also partake of the same desirable qualities, and are therefore of superior excellence for bacon. Considering these, it is to be hoped that the Americans, at least, will never attempt to alter the breed by crossing other swine upon it, for the only result will be a deterioration. The Berkshires can improve most other breeds, but no other breed that we know of can improve them; we would not even recommend a fresh cross of the pure Siamese.

6. Supposed stolen cross of the Spotted Black and White Chinese.—The writer of this has been asked how it is that white spots are found in the improved Berkshires, if no other colours prevailed in the breeds used to form it, than black and buff, as described above. He can account for it in no other way than by a supposing a stolen cross may also have been taken from that family of the Chinese, which is about equally spotted in colours of black and white. Such of these as the writer possessed in his piggery upwards of thirty years ago, were much like the Siamese, save that they were not so heavy in the hams and shoulders; were flatter in the sides, with more belly, fuller in the jowls, and had little lean meat in the carcass. We have occasionally seen pigs called the improved Berkshire, as fat-jowled and as spotted as these Chinese, but the better breeders rejected them as more fitted for salt pork for barrelling, and a herd to those with a greater proportion of the darker colours, finding them much superior for ham and bacon, and also for fresh pork.

3. Colour and Marking of Best Breed Berkshire Swine.—The most favoured colour among the best breeders in 1841 was a deep rich plum, with a slight flecking on the body of white or buff, or a mixture of the two: a small blaze in the face; two to four white feet, and more or less white hair in the tail. The plum colour was preferred to the black or slate, because it carried rather higher style and finer points with it, a superior quality of flesh, softer hair and thinner skin. In fact, to use a just and expressive phrase, the animals thus marked seemed higher bred.

The committee submit the following standard of characteristics and markings:

Colour, black, with white on feet, face, tip of tail, and an occasional splash of white on the arm, while a small spot of white on some other part of the body does not argue an impurity of blood, yet it is to be discouraged, to the end that uniformity of colour may be attained by breeders; white upon one ear, or a bronze or copper spot on some part of the body argues no impurity, but rather a reappearance of original colours.—Markings of white other than those named above are suspicious, and a pig so marked should be rejected.

Face, short, fine, well dished, broad between the eyes. Ears, generally, almost erect, but sometimes inclining forward with advancing age, small, thin, soft, and showing veins. Jawl, full. Neck, short and thick. Shoulder, short from neck, to middling deep from back down. Back, broad and straight, or a very little arched. Ribs—long ribs, well sprung, giving rotundity of body; short-

ribs, of good length, giving breadth and levelness of loins. Hips, good length from point of hip to rump. Hams, thick round, and deep, holding their thickness well back and down to the locks. Tail, fine and small, set on high up. Legs, short and fine, but straight and very strong, with hoofs erect, legs set wide apart. Size, medium. Length, medium, extremes are to be avoided. Bone, fine and compact. Offal, very light. Hair, fine and soft, no bristles. Skin, pliable.

The Berkshires are hardy, prolific and excellent nurses; their meat is of superior quality, with fat and lean well mixed.

CHESTER WHITES.

The following may be given as a scale of points:

Head short, broad between the eyes; ears thin, projecting forward and lap at the point. Neck short and thick, jowl large, body lengthy and deep, broad on back; hams full and deep; legs short, and well set under for bearing the weight; coating thin and white, straight and if a little wavy not objectionable; small tail, and no bristles.

NEAPOLITAN SWINE.

The Neapolitan breed is very thrifty, matures early and fattens quickly. Its meat is admitted to be more delicate than that of any other breed of swine, especially resembling that of a very fat young chicken. As others do not think of importing more Neapolitan pigs, and as it may consequently soon become an established breed with us, your committee recommend they the same range of premiums be awarded to them hereafter as to the Essex, as they may be of great assistance in improving the breeds of swine throughout the country.

It is altogether probable that the reputation which the breed has for delicacy of constitution when young and in a cold climate, has deterred breeders from keeping these swine. We cannot, however, learn that this reputation has a good foundation, for wherever bred, it has given high satisfaction. Still breeders naturally have avoided having sows farrow in cold weather, (and what breeders do not?) and they have taken care that the young have not been exposed to cold storms or too close confinement. In fact the breed treated as any high bred race should be has not proven delicate, but quite the contrary. The fact that the pigs are naked, almost perfectly hairless, has certainly more to do with the reputation for delicacy than anything else.

Like the thorough-bred horse, the Neapolitan has a delicate look, a peculiar grace and stylishness, a look of intelligence, with vivacity and sprightliness unusual in swine, and which in this breed do not seem to be incompatible with the surprising aptitude to lay on flesh, or to grow rapidly on a small amount of food.

In regard to the Essex it is well known that the Neapolitan formed the foundation of the improvement in that breed, and in comparing specimens of the two we can see plainly the results of a cross of a broad, deep, grass feeder with a small animal of great delicacy and refinement proving when established to confer those qualities which are of greatest value in the parent breeds and being capable of imparting them to its crosses with breed less finely organized.

We can but regard this as one of the purest and most valuable breeds in the world. It is of great utility and hence imparts its characteristics with great uniformity. It possesses the most delicate, tender and delicious flesh of any well known

breed, whatever may be true of the breeds of the distant East.

It is one of the easiest kept breeds known, being difficult to keep down in good breeding condition. It is one of the gentlest and easiest managed and least fastidious about food of any breed we have ever kept. The sows are good mothers, furnishing plenty of milk, and are reasonably prolific. The breed has, when killed, a minimum amount of oil, and furnishes juicy hams and shoulders, well marbled and not coated with masses of thick fat an abundance of leaf lard, and the most delicate side pork for salting for family use. In conclusion, we submit for consideration a description and scale of points.

CHARACTERISTICS.

Head, small; front head, bony and flat; face slightly dishing; snout rather long and very slender; ears, small, thin, standing outward and forward, nearly horizontally and quite lively; jowls, very full but not large; neck short, broad and heavy above, with small dewlap; trunk, long, cylindrical, well ribbed back; back flat and ribs well arching, even in very low flesh; belly, horizontal on lower line; hind quarters higher than fore, but not very much so; legs very fine, the bones and joints being smaller than those of any other breed; hams and shoulders well developed and meaty; tail, fine carried flat at extremity, with hairs on each side; general colour, slaty or bluish plum colour that is, dark blue, with a cast of coppery red; skin, soft and fine, nearly free from hair, which when found upon the sides of the heads and behind the forelegs, is black and soft and rather long; flesh to the feel fine and elastic.

Disqualification.—1. Any colour except uniform black, slate colour, plum colour, or coppery slate, more or less dark. 2. A coat of coarse hair. 3. Any evidence of impurity of blood or a cross. 4. Any deformity or malformation.

THE SUFFOLK.

The committee reported as follows:

Mr. Sidney says: Yorkshire stands in the first rank as a pig breeding county, possessing the largest white breed in England as well as an excellent medium and small breed, all white, the last of which transplanted into the south, has figured and won prizes under the names of diverse noblemen and gentlemen, and in more than one county. The Yorkshires are closely allied with the Cumberland breeds, and have been so much intermixed that with the exception of the very largest breeds, it is difficult to tell where the Cumberland begins and where the Yorkshire ends. It will be enough to say, for the present, that the modern Manchester bear, the improved Suffolk, the improved Middlesex, the Coleshill, and the Prince Albert or Windsor, were all founded on Yorkshire-Cumberland stock, and some of these are we may say pure Yorkshires transplanted and rechristened.

Speaking of pigs kept in the dairy district of Cheshire, he says, "White pigs have not found favour with the dairymen of Cheshire, and the white ones most used are Manchester boars, another name for the Yorkshire-Cumberland breed." He says in another place, and all the authors who have followed him, down to the latest published work on the subject, occupy space in describing various county pigs, which have long ceased to possess, if ever they possessed, any merit worthy of the attention of the breeder. Thus the Norfolk, the Suffolk, the Bedford, the Cheshire, have each separate notice, not one of which except the Suffolk, is worthy of cultivation, and the Suffolk is only another name for a small Yorkshire pig.

CHARACTERISTICS.

Head small, very short; cheeks, prominent and full; face, dished; snout small and very short; jaw, fine; ears, short, small, thin, upright, soft and silky; neck, very short and thick, the head appearing almost as if set on front of shoulders, no arching of crest; chest, wide and deep—elbows standing out; brisket, wide but not deep; shoulders, thick, rather upright, rounding outwards from top to elbow; crops, wide and full. Sides and flanks, long ribs, well arched out from back, good length between. Shoulders and hams, flank well filled out, and coming well down at ham; back, broad, level and straight from crest to tail; no falling off or down at tail; hams, wide and full, well rounded out, twist very wide and fall all the way down; legs small and very short, standing wide apart, in sows just keeping belly from the ground; bone, fine; feet, small, hoofs, rather spreading; tail, small, long and tapering; skin, thin, of a pinkish shade, free from colour; hair, fine and silky, not too thick; colour of hair pale yellowish white, perfectly free from any spots or other colour, size, small to medium.

THE ESSEX.

The Essex is a black hog originating in the South of England. They are of small to medium in size and are extensively used in England to cross on the large, coarse swine, to improve their fattening qualities.

The best specimens may be known as follows:—Colour, black; face, short and dishing; ears, small, soft and stand erect while young, but coming down somewhat as they get age; carcass, long, broad, straight and deep; ham, heavy and well let down; bone, fine; carcass, when fat, composed mostly of lard; hair, ordinarily rather thin. The fattening qualities being very superior; as breeders they are very prolific and are fair nurses.

The Most Profitable Hog for the Raiser and Consumer.

Your committee, to whom was referred a resolution as to what characteristics a hog should possess to be the most profitable hog for the raiser and consumer, would respectfully submit the following:

He must have a small, short head, heavy jaw, and thick, short neck; ears small, thin and tolerably erect, not objectionable if it droops slightly forward; must be straight from the neck back to flank; must let well down to the knees in brisket; of good length from head to tail; broad on the back; ribbed rather barrel-shaped; must be slightly curved or arched in the back from shoulder to the setting on of the tail; tail, small; long in the ham from hook to letting of the loins; shoulder, not too large to give symmetry to the animal; ham, broad and full; hair, smooth and evenly set on; skin, soft and elastic to the touch; legs, short, small and well set under, broad between the legs; good depth between bottom and top of the hog; with pleasant quiet disposition; should not weigh more than 300 to 400 lbs., gross, at 12 to 18 months old, according to keep; colour may be black or white or a mixture of the two. The above described hog will measure as many feet from the top of the head to setting on of tail as he does around the body, and will measure as many inches around the leg below the knee as he does feet in length around the body; depth of body will be four-fifths of his height.

SCALE OF POINTS.

The committee reported the following scale of points aggregating 100:—

1. Back, 10. 2 Long ribs, 8. 3. Short ribs, 7. 4. Shoulder, 5. 5. Ham, 12. 6. Length of body, 6. 7 Flank, 6. 8. Twist, 6. 9. Snout, 4. 10. Jaw, 3. 11. Face, 3. 12. Ear, 2. 13. Neck, 4. 14. Belly, 4. 15. Skin, 5. 16. Hair, 3. 17. Bone, 3. 18. Legs, 3. 19. Feet, 2. 20. Tail, 1.

Adopted by the convention.

WHAT CONSTITUTES THOROUGH-BRED SWINE.

The committee report as follows:—

In the absence of any system of records by which pedigrees of swine are kept, your committee can only give an expression, which, from the nature of the case, must be somewhat general.

Only such breeds should rank as thorough-breds which are recognized in authentic history as of sufficiently remote origin when bred in a direct line, to result in the establishment of a fixed type, capable of duplicating themselves with uniformity.

Your committee would recommend that the leading breeders of pure bred swine form breeders' clubs, for the purpose of establishing a herd registry, after the plan adopted by breeders of thoroughbred cattle, in order to secure greater uniformity, and to perfect as soon as possible the various breeds.

Adopted unanimously.

CLASSIFICATION OF SWINE AT FAIRS.

A committee who were appointed to prepare a classification of swine, to be recommended for adoption by agricultural societies, reported as follows:—

Class 1. Berkshires.

Class 2. Poland-China.

Class 3. Large white breeds. To include Chester Whites, Large Yorkshires, Large Lancashires, Cheshires or Jefferson Co., and other similar swine.

Class 4. Small white breeds. To include Suffolks, Small Yorkshires, Small Lancashires, and other similar swine.

Class 5. Small black breeds. Essex and Neapolitans.

Class 6. Cross breeds, and all not eligible in the other classes.

Adopted.

Township of Hamilton Farmers' Club.

A meeting of the Township of Hamilton Farmers' Club was held at Mrs. Wood's hotel, Cobourg, on Saturday the 30th of November.

The following report was read.

As this is the annual meeting of the Club, a brief review of the proceedings of the past season may not be thought out of place; at the last meeting of the previous year, the best method of preparing land for spring wheat, and the proper quantity of seed to the acre, had been discussed. Then "the care and management of stock during winter was considered at the first meeting this season.— This was followed by a discussion on "the best kind of cattle for this section of country," then "the best method of preparing the land for, and planting an orchard," was considered. The next subject was "the best method of getting up and conducting a Spring Fair,"— then "Barley and its cultivation" was discussed; while at the last meeting in Spring the subject for discussion was, "the cultivation of Turnips, Carrots, and Mangold Wurtzels."

It is to your Committee a matter of surprise, and great regret, that so few of the many excellent farmers in the Township should take so little interest in the proceedings of the Club, or even attend its meetings; which are at least intended to promote their interests. There are many advantages to be derived from a well conducted Farmers' Club. It serves to create and encourage an inquiring spirit,—and leads the farmer to reflect upon, and digest his observations and reading: it tends to make him read more, and to read more carefully and understandingly,—it leads him to make experiments, and to make them accurately so as not only to satisfy his own mind, but also the minds of the other members of the club. Farmers are not wanting in talent,—in natural capacity; they need only practice to enable them to explain to others clearly and forcibly their own persuasions and opinions. This practice is afforded by a club—it assists him materially in expressing his ideas, where every one feels free to express himself, and obliged to contribute something to the general fund. In conclusion, your Committee hope that their successors in office will be able to devise some method to make your meetings more useful and interesting, and to secure for them a much better attendance in the future than we have had in the past.

The secretary stated to the meeting that the gentlemen who were to have introduced the subject or discussion, viz:—"The rotation of crops" would be there, but that Mr. E. Aitchison had sent them a short paper, with a plan for a seven years' rotation. The paper was as follows:—

"The rotation of crops on our farms is one of the first lessons a farmer ought to learn and practise. We all know what the consequence is if no attention is given to rotation. In olden times it was plough plough, and sow wheat. The effect of this unvarying course has been eminently successful in the present day in the accumulation of debt and mortgages and of almost driving some of our best cereals from the country.

The wheat crop was once the pride and glory of our country,—but now where is its head? Bowled down, not with the shining overstocked head as of yore,—but in shame for the treatment we have given it:—Rise up, one and all, and for the honour of our profession restore the soil to its former self by a good system of rotation—for without system the restoration of our land will be a snail's enterprise.—

I have made a draft of a farm of one hundred acres—divided into ten, ten acre fields, and also what the crops should be in each field for seven years—and I will be glad if a better system can be shown by some one than the one I present.

The Secretary read Mr. Aitchison's plan as follows:—1st, Peas on ploughed up sod,—2nd Wheat, 3rd Oats or Barley, 4th Planted, 5th Wheat or Barley seeded down, 6th Hay, 7th Grass or hay. In Mr. Aitchison's plan he had a field for permanent pasture, but the 7th year might be pastured instead of mown, and then begin in the same rotation again.

Mr. Henderson, said he intended to change the system he had been following: they had been tilling a great quantity of their land, but he found that it did not yield as well as it formerly did,—he would like to have a cheese factory near, so that he could have more pasture and hay, and plough little more than half as much land as he now did. He thought if their ground lay longer in grass, they would have much better crops when they did plough. He always had the best spring wheat, after peas—better than after roots. In breaking up a sod field he would sow peas (black-eyed marrow fats did well

with him) then give the land two furrows in the fall, and sow his wheat as early in the spring as possible. If the seasons had been adapted for fall wheat, as they used to be, he would sow very little spring wheat, but would summer fallow and sow fall wheat, or else sow it after peas. Did not see much difference in wheat sown after fallow or after peas. The last two seasons the wheat and clover looked very well when the snow went off, but they were killed very soon after that. He had sown oats on sod, and saw very little difference between wheat after them and after peas. Would plough sod for both oats and peas in the fall; if not ploughed till the spring, he thought the land got too loose for wheat. He did not grow much barley, as it had to be thrashed and taken to the market at the season they were busy on the farm.

Mr. Barnard said he thought it was almost folly for a farmer to try fall wheat in Ontario now. If it would have done, he would have preferred to summer fallow his sod ground, and sow fall wheat; but as that would not do here now, he would break up his land and sow peas, then wheat; after that a hay crop, then seed down with spring wheat; then hay and pasture, making a six years rotation.

Mr. Pratt said he found it very difficult to follow any particular rotation. His practice had mostly been to break up his sod ground in the spring and sow it with peas; then give the land two ploughings in the fall and sow in the spring with wheat; then oats; then summer fallow at least part of the land (as we cannot grow enough of hoe crop here to clear all our land, as they can do in England with their cheap labour and long season). He would sow wheat after his fallow and hoe-crop; then barley seeding down with it. He thought every farmer ought to summer fallow to keep his land clear; seeding down often would keep down the thistles, but it had no effect in killing the wild mustard (charlock), though summer-fallowing would not clean the land of that, it would help it greatly.

Mr. Sidey said that he also, as far as his experience went had found it very difficult to keep to any particular rotation of crop; many of them that came out here, and bought farms, had to raise the money out of the land to pay for it, so that they often had to plough and grow more grain crops than they otherwise would do. Then these young seeds were often killed which threw the land out of its course, and it had to be ploughed up. Some time ago his plan had been to plough up his grass land in the fall (after it had lain three years) and sow it in the spring with wheat; but since that he had tried peas on his sod land and found that the wheat did much better after them. We must have oats, would take them after a wheat or barley crop. Peas he believed were a renovating crop; he thought they could be made a very profitable crop, found them better than roots for preparing land for wheat, he never was successful with oats on sod-ground, they did not do well with him, the rotation he aimed at was 1st peas, 2nd wheat, 3d Oats, 4th ploughing, 5th wheat or barley seed down with clover, then three crops in grass, mow two years and pasture one, and then begin the same course again.

The next meeting of the club is to be held at Mrs. Wood's hotel, Cobourg, on the last Saturday of December, the subject for discussion to be "The sheep best suited to this locality and their management." The officers for the ensuing year are John Pratt, Esq., President; Walter Riddell, Secretary; Messrs. Henderson, Bellerby, and Sidey, the committees of management.

A Seventy-Thousand-Acre Farm.

SPECULATION OF A LONDON SHOPKEEPER.

Mr. Wm. Carr of Stackhouse, Yorkshire, England, who has been for some months in the United States and Canada, has addressed the following letter to the *Albany Country Gentleman*:

For years the surplus labour and super-abundant capital of European nations have found their natural outlet in America. Each has sought here a wider and more remunerative field of operations than that offered them at home, but in most instances capital has looked for speculative returns, and labour alone to excessive compensation.

At the present time, however, Mr. George Grant, an English gentleman from London, (for twenty years senior partner of the well known firm of Grant & Gask of Oxford Street) — a man of large means and philanthropic ideas, is making an apparently intelligent effort to organize a plan designed to shelter the immigrant from the grasp of irresponsible land speculators, and at the same time offer to such worthy English working men as he may select, the means of obtaining a substantial foothold in this country, and fair remuneration for honest toil.

With this object in view, Mr. Grant has quite recently purchased a tract of land situated upon the line of the Kansas Pacific Railway in Ellis County, Kansas. This purchase is probably the largest body of land owned by one individual in the United States, being each alternate section, according to Government survey, throughout a tract comprising two hundred and sixteen square miles, or an area of one hundred and thirty-eight thousand two hundred and forty acres, thus making the actual amount owned by Mr. Grant, *sixty-nine thousand one hundred and twenty acres*—just one-half the above mentioned tract, the remaining half being reserved by the United States as public domain. Mr. Grant has sailed for England, there to make full arrangements for carrying out his plans upon his return in the early spring. What these projects are is explained by that gentleman himself in a brief interview recently held with him on the subject.

Q. May I be permitted to inquire, Mr. Grant, what first turned your attention to the purchase of such a tract of land in the United States?

A. With pleasure. Having been long connected with philanthropic efforts in England, I am led to believe that many very worthy working men, who earn but a mere subsistence at home, would gladly emigrate to this country could they feel reasonably sure beforehand of securing a foothold here and getting ahead, without being made to undergo the perils of Castle Garden first, and subsequently run the gauntlet of western land jobbers. In England we have too little land for the population; here the reverse is the case. It should equalize itself by a healthy, not a forced emigration. Those who leave England because they *must*, are not of the class most likely to succeed, or to develop properly the country they go to.

Q. How do you propose to remedy the evils you mention?

A. By offering inducements to a better class of persons to come here, and by practically helping them to get along. In order to do this, I propose to select from a class known in England as "small farmers," such as are desirous of procuring more land and increasing their operations. I will provide them with larger farms on my purchase than they can obtain from Government, on such liberal terms as will enable them to employ

nearly all their ready capital in their business. A very large share of the tract I shall reserve for myself, in order to establish thereon the largest stock farm in this country. Upon this farm, within two years, I shall place about 50,000 head of stock, comprising cattle, horses, sheep and pigs. The care of these will give employment to a large number of workmen and employees, and enable me to offer a home market for very much of the grain produced upon the entire tract.

Q. Would you not be able to dispose of the land more rapidly by forming a "pool," and interesting others with you?

A. Undoubtedly, and many propositions of the kind have already been made to me, but I have other objects than money-making. I desire to accomplish some good for others, and this is seldom the object of "pools," I believe. I have, however, disposed of some sections of my land to gentlemen in England of high social position and large means, who have younger sons or other persons for whom they desire to provide in this way. This will have the effect of making more work for the labouring class, as there will be houses, barns, stock yards, &c., to be built upon these farms.

Q. You appear to contemplate the expenditure of considerable capital?

A. Yes; money will not be wanting to make this the most successful effort of the sort ever undertaken.

Q. What steps have already been taken toward carrying out your plans?

A. A railway station has been established upon my property ten miles east of Hayes City, Kansas, and two hundred and seventy miles west of Kansas City, Missouri. This station is named Victoria, and there are now being erected commodious buildings suitable for reception houses, and also proper shutes for loading and unloading stock. More than this can hardly be accomplished before spring, when active operations will begin. I do not propose, however, to build a fast western town to be overrun with gamblers and roughs, and a clause will be inserted in every deed and lease voiding them whenever the premises shall be rented or used for the sale of intoxicating liquors, or for dancing or gambling houses. I am not a fanatic on this subject, nor do I want everybody to go thirsty in Victoria City, but I mean to retain full control of this myself, and am determined to have an *orderly* if not a *moral* town.

Q. What water, if any, have you upon your property?

A. Big Creek (now Victoria River) runs directly through the tract for thirty miles, affording a water frontage on both sides for sixty miles. Still further south runs the Smoky River, twenty miles of which flows through my land. These large streams will undoubtedly afford water enough for stock-raising and other purposes, and there can be no doubt but that the cultivation of the soil and the planting of trees will largely increase the rainfall, already sufficient for all practical purposes.

Q. Would you not consider it desirable to purchase the alternate sections now held by the United States Government?

A. Yes; but the laws of the United States seem specially designed to prohibit the development of the agricultural resources of the country on any extended scale. I am informed that special legislation will be required to enable me to purchase the alternate sections. I shall make every proper effort to procure the necessary legislation, but the policy of the Government seems to me shortsighted. The United States, like the fabled dog in the manger, obstinately retains possession of that which it cannot make proper

use of, keeping out those who would gladly turn it to good account. Had the same policy been pursued in Australia, she would never have become what she now is, one of England's most prosperous colonies.

Mr. Grant has already made a purchase of a couple of high-bred bull calves of Mr. Cochrane, the well known breeder of Short-Horn cattle at Hillhurst, a Canada, paying him a high price for one of the Booth, and another of the Bates blood. He has bought in addition a large number of pure bred Berkshire hogs, believing those of Mr. Grant's breeding to be equal to any to be had or procure in England. Most of his live stock, however, he intends to ship from England in the spring, and seems fully determined to be second to no breeder in the States, either in the quantity or quality of his stock. How far Mr. Grant may or may not be successful in his undertaking it is of course impossible to say; but he has the air of a man accustomed to deal with large enterprises, and possessed of the requisite energy and ability to render success at least probable in what he does. His example will doubtless be followed by other foreign capitalists of philanthropic propensities. The magnificent proportions of such an agricultural enterprise might certainly tempt the most exalted agricultural ambition, and the farmer standing in the midst of a *seventy thousand* acre farm may well congratulate himself upon being "monarch of all he surveys."

The English Farm-Prize Competition of 1872.

Report of Mr. Thomas Jenkyns, Town Hall, Penrith

Despite the progress made in agriculture during the last thirty years, and notwithstanding the many facilities and inducements still offered for the improvement of land, there may yet be seen in nearly every district of the United Kingdom hundreds of acres failing to yield their fair share of produce, while the stock they carry are deficient in numbers and economical qualities. No greater stimulus can well be given to the better management of land in any locality than is likely to arise from the seizing and describing the best specimens of farming, as is now being done through the agency of the Royal Agricultural Society. This system of farm-competition was first started in connection with the Oxford meeting of 1870, and having then, as also last year, proved eminently successful, is commended itself to the favourable notice of Sir Watkin W. Wynn. Accordingly, that staunch agriculturist offered a silver cup of £100 value for the best managed farm in South Wales and Monmouthshire, the Society contributing a second prize of £50. The conditions of the competition were the following:—

1. That the farms are not less than 100 acres in extent.
2. That not less than one-fourth of the land (exclusive of sheepwalk) is under tillage.
3. That they are held by tenant-farmers, paying a *bona fide* rent for not less than three-fourths of the land in their occupation, or by landowners occupying their own farms, the total extent of whose property in agricultural land (exclusive of sheepwalk), does not exceed 200 acres, and whose sole business is farming.

Looking at the great breadth of country to which the competition was open, and the value of the prizes offered, the number of entries (only 19), struck the judges as being

remarkably small. And while amongst these we found some very fine farms, and a few excellent farmers we regret to have to state that not a few of the entries were totally unfit for an inspection of this kind. Far be it from us to undervalue the frugality, industry, and sterling honesty plainly practised by some of the less eligible of the competitors, but surely lands dirty, imperfectly tilled, and out of condition; fences crooked, broken down, and three times two wide; ditches and water-courses entirely neglected, everywhere with out gates; buildings low, dark, and ill-ventilated, and inadequate to the requirements of the farm; live-stock ill-bred, ill-fed, and ill-looking; farmyard muddy and almost impassable; surely these are not the marks of prize-farming. And yet we feel bound to state that these shortcomings prevailed to a considerable extent on some of the farms. Perfection in every instance was by no means looked for; but we did expect that farms held by men of some mark—men recognised in their several neighbourhoods as pioneers in agriculture—would make all due allowance for the unfavourable season, have been found at least moderately clean. In this hope, however, we were in more than one instance grievously disappointed.

Let it not be supposed, however, that our list contained all, or even a large proportion of the farms in the district fit for exhibition. Far from it; and it is to be regretted that some of the holdings passed through in our journeyings, bearing as they did the strongest evidence of enterprise, capital, and liberal treatment, and having earned, as we were informed, no small local reputation, had not been included in the entry-list. Had we been permitted to view a larger number of first-class farms, and therefore, we may suppose had seen a greater variety of farming more information would have been gained, and fresh facts would have been brought out, thereby rendering this report more acceptable to the reader.

The inspection of the competing farms has in former years been confined to the months of May and July; but as the sufficiency of this plan had been questioned, and certain discussions on the subject had taken place in the Council, Mr. Jenkins, secretary of the Society, desired my colleagues (Mr. Thomas Jenkins, of Plas-y-ward, near Ruthin, and Mr. Enlay Dun, of Weston Park, near Shipton-on-Stour) and myself to meet him, early in the month of January, and confer as to the best seasons in which to visit the several holdings. At liberty to make as many surveys of the farms as we might deem necessary, and the choice of time being also left with us, we agreed that a winter inspection was not only desirable but of the utmost importance. Besides the field operations which, in a favourable season and in moderately dry situations, may be looked for in January and February, an inspection at this season enabled the judges to see something of the house-feeding of the cattle and the winter management of the sheep stock. Moreover, the instructions placed in our hands would seem to require that if the farms were at all worthy of a minute inspection, they should be examined at two or more seasons of the year, as diverse as circumstances would permit. The instructions were that we should especially consider—

1. General management with a view to profit.
2. Productiveness of crops.
3. Condition and suitability of live-stock.
4. Management of grass land.
5. State of gates, fences, roads, and general neatness.

Thus admonished, we began our first survey on the 30th of January, finishing it on the 7th of February; while our second inspection lasted from the 12th to the 20th of June.

After the hints already given, little surprise will be felt when it is stated that our first examination enabled us to weed out seven of the nineteen competing farms as not worthy of further consideration.

AWARD OF PRIZES AND COMMENDATIONS.

First Prize to Mr. William Savours Powell, Eglwysunwyd near Tabach, Glamorgan-shire.

Second Prize to Mr. Valentine Parsons, Slough Farm, Caerwent, Monmouthshire.

Highly Commended for clean and in other respects creditable farming:—

Mr. Daniel Owen, Ash Hall, Cowbridge;

Mr. Michael Spencer, West Aberthaw, Cowbridge.

Mr. Rees Thomas, Saint Athan, Cowbridge.

Commended for certain special features in their management:—

Mr. James Culverwell, Penrhos, near Abergavenny, Glamorgan-shire, for varied improvements effected during an eight years' tenancy, by the removal of dead and useless fences, and the levelling of unsightly banks and ditches; also for the erection, partly at his own cost, of well-arranged additional buildings, and for his fine flock of Cotswold sheep.

Mr. John Jones, of Pant-y-gofre, near Abergavenny, for his judicious selection and careful management of a very superior lot of grazing beasts, bought to fatten on deep, rich land.

Mr. William Benjamin Roberts, of Loveston, near Pembrokeshire, for his very creditable herd of Pembrokeshire cattle, and his excellent flock of Cotswold and Leicester sheep.

Maine Farmers in Council.

The semi-annual session of the Maine Board of Agriculture and Farmers' Convention, convened at Skowhegan, Tuesday, Oct. 8th.

The president of the board read an able and carefully prepared paper, having reference to the general topic decided upon for a chief theme for consideration. We present a brief abstract:

"It is claimed that agriculture in our State is in a decline, that farms are being abandoned, the rural population gradually decreasing—and it must be admitted that some of these claims are grounded on facts. Average farming in the older sections of the State is not being rewarded with so bountiful returns as formerly by the same efforts, but these efforts of the average farmer are not well put forth. A comparison of the statistics of production in Maine for the last three decades will show that horses have considerably increased, and hogs decreased, while other kinds of stock have remained about the same. Of crops, corn has fallen off 700,000 bushels, wheat and oats eighty per cent, potatoes doubled; barley largely increased, orchard products more than doubled. We produce nearly 300,000 more tons of hay, but keep no more stock. The increased value of orchard products is due to better transportation, which enables the producer to realize more money from the product than from any increase in the

number of bushels raised. These figures show that the premises assumed in relation to the decline of agriculture are correct—for while we barely hold our own and hardly that in stock, and are falling off in corn and grain, we have at the same time enlarged the number of acres of improved land, by bringing under cultivation many acres of newly cleared lands—and that the agriculture of to-day in our State does not essentially differ from the agriculture of thirty years ago in kind. We keep no more stock, no less; we cultivate the same acres grow the same kinds of products, and raise less every year.

“One great trouble with us is we have used the mind in searching for a chance to play the winning card in some enterprise outside the farm—while our lands have been left to do the farming alone. It has been required of the hands to earn the living by working the soil, while the mind was engaged in other enterprises. This must be stopped, and we must make our farming a business and learn that the farm is the best savings-bank. There is too much aimless farming in the world—we must have a clear idea of what we would aim to do, and a definite plan of operations by which to secure it. When we have decided what course to follow, and have an object in mind, all our energies in that direction must be put forth to make the plan successful. Our farming must be essentially modified, or the farmers cannot prosper. We must to a large extent turn our attention to supplying our own wants, in addition to the great staples grown to be sold out of the state; and to the extent of the demand, our attention should be directed to those productions which come least into competition with other more favored locations.

As the business of raising and selling beef has been managed by most of our farmers, it has been ruinous—because we have sent half grown bone and muscle and hide to market without any fat to go with it. We can make it pay to grow fat oxen and choice steers. In dairy products we shall be perfectly safe, if instead of barely holding our own in the number of cows kept, we largely increase them till at least the home trade is supplied with butter and cheese made in our own State.

Short-horns in England.

The high value of high-class short-horns is shewn not only in the prices realised at sales and the sums exchanged for them in private purchase. There is another feature deserving attention in the Short Horn market. We may pass even the letting prices of sires, in these days often amounting to comfortable annuities. We allude to the single fees charged for some of the most fashionably bred bulls. When Colonel Kingscote sold Third Duke of Clarence (23727) to Mr. Bowly, he raised the service price of Duke of Hillhurst (28401) to 50 guineas each cow. Since this semi-prohibitory fee was imposed, eight cows have visited the Duke Kingscote and returned apparently safe in calf. Ten others are at present at a sojourn there. They are the Earl of Danmore's two American Duchesses, Mr. Oliver's superb cow Grand Duchess 17th, a Kirkcaldington and a Gazelle from Siddington, a Barrington and an Acomb from Brailes, and three of the gems of the magnificent Holker Hall herd, including that most beautiful cow and prime bull-breeder Lady Oxford 5th. Besides the foregoing, a choice member of the Darlington family, Mr. Thompson's (Badminton), by Grand Duke of York (24071) is expected to arrive shortly at Kingscote.

Items.

NEW ZEALAND MODE OF KEEPING POTATOES.—Pierce them with a packing needle, thread them as children do horse chestnuts, and hang them up in dry rooms.

HORTICULTURISTS' MOTTO.—Never be above your business, but strive to be the best in your line. Don't be afraid of soiling your hands, there is plenty of soap to be had.

There have been very large importations of potatoes from Belgium and Holland, at Great Grimsby, amounting to not less than 200,000 pecks. The French boats are bringing in full cargoes of sound potatoes, which meet with ready purchasers at 1-1d. per peck.

Mr. Lawns calculates the wheat crop of the United Kingdom for 1872 to be 14 per cent. below the average, and considers this to be equivalent to the necessary importation from other countries of about 12,000,000 quarters during the year running from Sep. 1, 1872, to the same date in 1873.

BEST FOOD FOR A YOUNG PIG.—There is nothing better than fresh skimmed milk and cooked corn-meal. Stir the hot corn-pudding into the milk, and feed warm, but be careful that the pudding is well broken up and mixed with the milk, so that there shall be no lumps or balls of hot pudding to scald the pig.

On several estates in the neighbourhood of Bath scores of deer, hares, and many pheasants have recently been picked up, and it being thought at first they had been poisoned, Mr. Broad, veterinary surgeon, made several *post mortem* examinations of the hares. In each instance he found the liver of the animal was full of worms.

A PROFITABLE COW.—D. G. Andrews, of Henry Co., Iowa, exhibited at the State Fair a six year old high grade cow, which had furnished in ten days 605½ lbs. of milk, or a daily average of 60½ lbs. Total amount of butter made from the milk in ten days 27½ lbs, or an average of 2½ lbs. a day. The cow was milked three times every twenty-four hours.

A RAT-PROOF CORN CRIB.—The simplest and cheapest way of making a corn crib rat-proof is to set it on posts say two feet high, and at the top place inverted tin pans, in size sufficient to extend two or three inches over the posts. Then keep the crib separated from every other building, and from the ground except by those posts.—*Western Farmer.*

DOGS IN THE GARDEN.—No more valuable help can be procured in the garden to disturb and destroy insects, than a brood of young ducks. They devour immense quantities of slugs and other inurious pests, and in their continual ranging disturb what they do not destroy. They are no more of the vegetables, unless it may be young cabbage plants.

A correspondent of the *London Daily News* writes:—A day or two since the Rev. Eschme Seale, vicar of Laming, Suffolk, me, according to an advertisement, his allotment tenants. The poor fellows said their “potato crop had proved a total failure,” but nevertheless on and all came cheerfully forward quite prepared, then and there, to pay their rent. The vicar returned it to them in full. He stipulated, however, that next year they should change their crop, and towards this he promised the cost of seed, wheat, barley, oats, or beans, whichever they might prefer.

CONCUSSION AS A MEANS OF DESTROYING INSECTS.—Mrs. A. W., writes how she clears her garden, as follows:—“My way is to bore a hole in a stump or log in the garden or orchard infested, and put in powder sufficient to make a very loud noise and heavy concussion, whereupon the insects will all leave. Try it. I think all who do will find it to their benefit.”

It is wonderful to what an extent people believe that happiness depends on not being obliged to labour. Honest, hearty, contented labour is the true source of happiness, as well as the only guarantee of life. Idleness and luxury induce premature decay much faster than many trades regarded as the most exhaustive and fatal to longevity. Labour in general actually increases the term of life.

TO DESTROY ANTS.—Fill small vials two-thirds with water, and add sweet oil to float on the water to within half an inch of the top. Plunge these upright in the ground, leaving only half an inch standing out, near the nest or runs of the ants. The ants will come for a sip, and go home to die. No insect can exist with oil stopping up its spiracles or breathing pores.—*Rural New Yorker.*

LONGEVITY IN THE HORSE.—A pony, the property of Mr. W. H. Wilson Todd, of Hainaby Hall, near Darlington, England, recently died at the ripe age of thirty-nine years six months. It was the last survivor of three, whose united ages amounted to ninety-eight years one month, the respective ages of the other two being twenty-four years five months and thirty-four years two months.

The report from the county of Dorset, England, respecting foot-and-mouth disease is again of a favourable character; while pleuro-pneumonia has entirely disappeared from the county. In Somerset, however, the latter disease has broken out very severely. Foot-and-mouth disease is on the decline. From Cambridgeshire, Huntingdonshire, and Norfolk, equally satisfactory accounts are received.

The entries for the National Dog Show, at Curzon Hall, Birmingham, are, says the *Midland Counties Herald*, this year more numerous than ever; inasmuch that those of a number of intending competitors who did not implicitly comply with the regulations as to time, &c., have been returned. The accepted certificates number nearly 1000; and the exhibition in every respect promises to be most successful and interesting.

BOILING CORN IN THE EAR FOR HOGS.—An experienced man in Illinois says that he finds much economy in boiling corn in the ear and so feeding it to his hogs. He supposes that the alkalis contained in the cob act upon the flinty covering of the grain and soften it, while they also loosen the attachment of the kernel to the cob. Certainly, the animals prefer to have the corn in this fashion. They fatten faster and keep in finer condition.

THE ROSE ON THE LAWN.—An English journal says:—Few persons are aware of the magnitude to which the rose may be grown, or the splendid effect it can be made to produce on a lawn or pleasure ground; yet with a sufficiently strong stem, and a system of careful and patient training, there can be no reasonable doubt but that the standard roses can be grown to the size and form of the ordinary examples of the weeping ash, having the branches all produced from the top of a single stem, and flowing downwards upon all sides—a very ornamental object for the lawn.

LENGTH OF LIFE OF PEACOCKS.—I have in my possession a peacock which was lately killed by accident; it had reached the age of ninety-six years. This fact I have been able to prove beyond all doubt, from the recollection of people living on the estate. It has just been beautifully studied. The long feathers of both wings are quite what, which I take to be a sign of old age. For the last two or three years it had been getting rather feeble. — J. D., Aylesbury, England.

WIRE FENCE.—A H. C. S. S. S., Monmouth Co., N. J., writes of what they know of wire fences as follows:—As to fence wire, we would advise, after a very special experience of twenty years No. 8 or No. 10. One pound will measure fifteen feet. We use five strands for cattle, and use No. 7 for the middle strand; posts six feet apart, and post well braced and secured; wires tightened whenever required by a cheap apparatus similar to that used in cording a bedstead.

The Boston hay dealers are purchasing large quantities of hay in Maine, paying from \$13 to \$15 per ton delivered at rail road stations. They press it into bundles of proper dimensions for the cars, and so compact that from nine to eleven tons can be loaded upon a car. They are introducing the practice of chopping the hay before drying it, as most of the Boston stable keepers now feed chopped hay, and they are setting up hay-cutting machines in several places.

BURNING LIME WITH COAL. The Waterloo, Iowa, Courier, in commenting on the burning of corn for fuel, says: "While at Iowa Falls, recently, the writer observed that Mr. Wells was burning corn as fuel in his patent lime kiln. Mr. W. assures us that with wood and corn in about equal parts, the fire was better, and scarcely more expensive, and that the lime was somewhat vastly better. Really it looked like the 'long ago,' to see the hundreds of barrels of bright corn thus consumed."

GREAT YIELD OF PEARS. Seth Fanner, Esq., of Erie county, N. Y., reports to us the largest yield of pears which has come to our knowledge this season. He planted five-eighths of an acre to Louise Bonne de Jersey pears, eleven years ago, and some years after many of these trees were destroyed by mice, but he has this season selected and sent to market from these trees eighty barrels of pears. This is equal to 320 bushels per acre. Three years ago, forty barrels were taken from the same trees, which was then thought a good crop. — Buffalo Stock Journal.

Messrs. Peter Saxe & Son of Sacramento, Cal., and West Troy, N. Y., have been transacting a large business for some time past in shipping stock to the Pacific Coast. They have just purchased 54 head of Short-Horns from Dr. Reno of Cynthiana, Ky., which are now en route by the Pacific Railway, and are eventually destined for purchasers in Oregon. They lately completed a shipment of Merinos, 140 rams and 310 ewes, purchased in Cayuga, Seneca, Ontario and Livingston countries, which have already reached Utah on their way to California.

AGRICULTURAL IMPLEMENTS IN 1870.—The Census Report shows the value of Agricultural Implements made in the United States in 1870 to have been \$72,000,000—three times the value of those made in 1860; but it should be remembered that this difference is due, to some extent, to an increase in the nominal value of material made after ten years' experience and progress; for the demand for machinery, growing out of scarcity of labour and adaptations of farms to its use, has greatly increased during the past twelve years.

The Birmingham Morning News states that Mr. W. E. Forster, M. P., Vice President of the Privy Council, has just purchased the estates of Canwell Hall and Shirall Hall, near Tamworth, Staffordshire, for the sum of £191,000. The estates contain 2903 acres, and are about 10 miles from Birmingham and close to Drayton Manor, the residence of Sir Robert Peel, Bart. M. P.

SALE OF FAT CATTLE AT HAMPTON COURT. On 2nd October there was a sale of fat oxen, the property of Her Majesty the Queen, in the Home Park, Hampton Court. The catalogue consisted of 62 lots, comprising 12 Devon bullocks, and 20 Welsh runts. There was a large attendance of buyers. Most of the animals, which were in prime condition, realized good prices, the competition being somewhat keen for most of the lots. The Welsh runts, which were first disposed of, realized prices varying from £18, 5s. to £23, 10s.; the Devons selling from £20, 10s. to £26, 7s.

THE WATERBURY CROSS GRAPE. The Florida and Palmetto has a coloured plate of this new exotic grape, raised by Wm. Paul, of Waterbury Cross. It is evident that the bunch and berries are very large, some of the berries being stated to have been from an inch and a quarter to an inch and a half long. It is expected to prove to be a fine late-keeping grape, a desirable companion to Lady Downe's seedling. The berries are oblong, oval in shape, and of a clear pale amber color; flesh solid, with a sweet pleasant flavour, much like that of the Black Hamburgh.

LARGE SALMON.—During October a large number of salmon have been taken with the rod out of the Cumberland Derwent. The bulk of the fish have been in good condition, and many of them over 30 lb. On October the 21st, a large, aged fourteen, named Bacon, was fishing with spoon bait, and hooked what proved to be the largest salmon ever caught in the river. It weighed 51½ lb., length 4 feet 4 in. in her girth, 2 feet 2 inches. It was a noble fish, in splendid condition. The Earl of Londale and party, who happened to be at the river side, had the fish sent to Whitehaven Castle. — Land and Water.

AMERICAN FARMERS.—The Atlantic says: We hazard the assertion that no class of equal average means lives so well as American farmers. One of these possessing a farm and buildings worth ten thousand dollars, will gather about him and enjoy more real comfort than could be obtained from the use of a hundred thousand dollars in New York. He may live in a more commodious dwelling than a metropolitan citizen having ten thousand dollars annual income. He may have his carriage and horses. His table may be supplied with every thing fresh in its season. His labour is less wearing than the toil of the counting room and office, and he has more leisure.

PRICES FOR SHEEP IN ENGLAND.—Among the sheep sales and lettings of the season in England, we should not omit to mention that of Mr. Kington's southdowns, at Hove. The prices made were unusually high—100 ewes having been sold for £530, and 16 rams bringing £344—an average for the latter of over £21 10s., say \$107.50 each. Ten rams were also let, realizing £310 in the aggregate—the highest price made being 90 guineas! The sale of Lincolnshires by Mr. Kirkham, Biscathrope, was also very successful—68 shearing rams, averaging over £27 each; 52 rams of other ages were offered, and the average per head on the whole 120 was £25 11s.—a very high figure for so large a number.

GERMAN FISHERIES.—It is stated that an association, having for its object the prosecution of the herring fishery, is about to be established at Emden, under the auspices of the Crown Prince of Prussia and the duke of Oldenburg. This industry is one which is likely to prove a lucrative occupation for those engaged in it, on account of the duty now levied on herrings brought into German ports by foreign fisherman. Salmon culture is said to be progressing favourably in Schleswig; and with a view to encourage enterprise in this direction, the Government has forwarded, free of expense, a large quantity of spawn from Hunningen, on the Rhine, to the different stations on the northern rivers. — Morning Advertiser.

ROYAL GAME PRESERVES.—The pheasant coverts in Richmond Park are to be shot through this month, and there is a good stock of birds for a royal battue. In Bushey Park hares are abundant, but there is no winged game, and the sport will be limited to two days during the season. There is a fair stock of hares in Hampton Park and the controversy between the officials and coursing men as to the exclusion of the latter from the royal demesne is still in abeyance, but efforts will be made to obtain a restitution of coursing rights this season. The deer herds in the Home Park, which have been affected with foot-and-mouth complaint, are recovering, and the bucks are getting into condition. The deer in Bushey and Richmond Parks have escaped the disease.

THE PURPLE-LEAF BIRCH.—Ed Andrie writes to L'illustration Horticole that while at the Horticultural Exhibition at Orleans, he saw some forty plants of a beautiful variety of the common white birch of Europe, the leaves of which were completely purple or purple-black, like the purple-leaf beech. Noticing the peculiarity in the colour of the foliage, he took scions from it and grafted them upon the young stocks of the common birch, so that now he has some sixty plants of one and two years of age. He thinks this new leaf-colour in the birch will prove to be a great acquisition, and that it succeeds in the poorest soils, at the same time preserving all the strength and rural beauty of the original type.

A GOOD WAY TO KEEP CABBAGE.—Select a dry place in your garden, or near the house; dig a hole two feet deep and place a barrel or box in it; put some small sticks in the bottom of the box or barrel, with some dry straw over them; then after cutting off the roots, and some of the outside leaves from your cabbage, place them in the barrel in layers, with some dry straw or hay between each layer, covering it with a board, or large flat stone; now bank the earth to the top of the barrel, and dig a drain to conduct away the surface water. I have tried a great many different ways to keep cabbage through the winter, but never found any better way than the above, as you can get it at any time, no matter how hard the ground is frozen. — LEXINGTON, Rochester, N. Y.

I want it understood, however, that my faith in good farming and my respect for good farmers grow stronger and stronger every year. I still believe in summer-fallowing on clay land, and am satisfied that fall-fallowing is a good thing. I believe that weeds can be killed, and am making considerable headway against them. My corn is the best and my corn stubble the cleanest I have ever had. I think we plow too much land, and do not plow our land enough. We must have cleaner land. We must raise bigger crops, or there is no profit in farming. We must keep better stock, and feed more liberally. We must

make more manure, and, what is still more important, we must make *better* manure. And we must take care of what we do make.—*The Deacon.*

Texas is the great catt'e hive of the continent. While New York, with her 4,000,000 inhabitants, and a settlement of two and a half centuries, has 750,000 oxen and stock cattle, Texas, now settled only about forty years, and with only half a million people, has nearly 4,000,000 head of cattle. A quarter of them are heeves, a quarter cows, and a half yearlings and two year olds. There cannot be much less than 500,000 calves raised and branded every year. They are raised on the great plains of Texas, which contain 152,000,000 of acres. In the vast regions watered by the Rio Grande, Neuces, Gaudelope, San Antonio, Colorado, Leon, Brazos, Trinity, Sabine and Red rivers, these millions of cattle feed the year through upon the finest of grass. They are owned by ranchmen, whose herds number from 1000 to 100,000.

MILK CELLAR.—A milk cellar will be coolest when well sunk into the earth, and not much above its surface. Eight feet would be a good depth. The windows, near the top of the walls, should be protected from the sun, either by trees or shrubs, or with blinds or shades; and wire screens inside should be made to exclude all insects. Covering the bottom with hydraulic cement is not a good conductor of heat, it will render the cellar warmer in summer and cooler in winter, by preventing access to the earth. Good stone flagging would be better in this respect, and hard burned brick would be better than common brick. There should be a ventilating flue run up from the upper part of the apartment, in which the current of air may be regulated by means of a register.—*Country Gentleman.*

NEW PEAS.—The fruit and vegetable committee of the Royal Horticultural Society of England, have been examining the new varieties of peas introduced by Mr. Saxton, and have made awards to the following which have been tested as superior. 1, Saxton's William I., an early green marrow. 2, The Superlative, a second early marrow, having the largest pod of any pea in cultivation. 3, Supplanter, a second early, with pods very large and broad. 4, Fill basket, a second early blue, a very prolific and handsome pea. 5 Omega, a very late green wrinkled marrow. A first-class dwarf wrinkled green pea of the largest quality. 6, Unique, an early dwarf green marrow. 7, Dr. Hogg, the earliest of the deep green wrinkled marrow. 8 Harbinger, an early round blue, the very earliest pea in cultivation.

CATTLE DISEASE IN ENGLAND AND THE IMPORTATION OF STOCK.—A meeting of the Leicestershire Chamber of Agriculture was held lately under the presidency of Mr. J. Croft, when the following resolutions were proposed and adopted:—"That it is the opinion of this chamber that all foreign fat stock should be slaughtered at the port of landing, and that all foreign store stock should be subjected to at least fourteen days' quarantine before being allowed to proceed thence into the country. That this chamber suggest to the Privy Council the desirability of full compensation being given out of the Consolidated Fund for all healthy cattle slaughtered by order of the Privy Council. That every precaution should be taken to prevent any stock leaving ports in Ireland, for Great Britain, or from entering into the latter until they shall have been inspected at the ports of departure and arrival by qualified officers appointed by Government, and certified to be free from the diseases now prevalent—foot-and-mouth complaint, pleuropneumonia, and the rinderpest."

The high price of butchers' meat in Melbourne at present is exciting the anxiety and disapproval of those who are charged with the catering for households. Complaints to the butchers are usually answered by the statement that they are not to blame, that the meat-preserving companies are the parties who are responsible for the dearth of animal food by the exportation of it in a preserved state to England. If this be so it is indeed a curious reaction to the state of things which existed in the colony a few years ago. Then there was such an abundance of meat in the country that it was sold "for a son," and became positively embarrassing. The meat-preserving companies were started in order to get rid of the surplus to some advantage. Now, the trade in exporting preserved meat has proved so lucrative that a scarcity of the staple article of food has set in, and the poorer classes suffer severely.

DEATHS FROM THE BITES OF ANIMALS, IN 1870.—By the Registrar General's thirty-fifth report, for 1870, just published, we learn that during that year, in England and Wales, hydrophobia was fatal in thirty-two distinctly ascertained cases, and glanders in four. These two are the only diseases known to be caused to man by his two most intimate domestic animals. Two children, however, died from the bite of dogs—not hydrophobic; one from the bite of a cat, and another from a cat sleeping on its face and so producing suffocation. The bite of a rat and of a ferret were fatal in one instance respectively, and one person, an adult, was stung to death by bees. The victims in the case of all the bites—dog, cat, rat, and ferret—were male children. Two hundred and fifty males, and twenty-two females, perished by means of "horses and other animals," exclusive of the large number of accidents connected with railways, tramways, mines, etc., and of the 954 males and 182 females returned as killed from horse "conveyances." The total number of violent deaths in the year was 16,593.

BLACK BASS FROM CANADA.—Mr John Parnady, Troutdale Fishery, Keswick, gives the following account of his attempts to introduce the American black bass into this country, in *Land and Water*.—You will be very sorry to hear that I have had another fruitless journey to Canada after black bass. Three times I got my fish a good distance by land towards Quebec, and each time they died from various causes—once missing the steamboat at Montreal, and having to keep them in water not good for them; another time they were jolted to death, I having to carry the tank in a waggon from Orillia to Beavertown, a distance of about 20 miles, over some of the worst roads in the world; and another time they got killed in portage on Severn river, Georgian Bay. At last, however, I did get a few very fine ones on board the Polynesian, at Quebec, and thought I was then safe; but, in spite of all I could do, these died before I got to Liverpool, the smallest ones living the longest, four of which I kept. I hope to start off again as soon as the winter breaks up at Quebec, to try again, as I shall never give up until I have succeeded.—*Scottish Farmer.*

A cheap and convenient way for a poor man to get a fine stock of cattle is to buy a male calf of some improved breed. From \$100 to \$200 will procure a pure blooded calf. In two years one can have a fine bull, and half-blooded stock from a good number of cows; and by hiring him out to the neighbours, one can soon get the price of the animal back. Besides, in a few years, the farm may be stocked with three-fourths and seven-eighths blood, which is practically as valuable for everything but propagation as full-blooded stock.

THE MEN WHO PLOUGH.—In the following grim, grand way does Thomas Carlyle take off his hat to the man that ploughs, that hoes, and reaps, and mows, and thrashes wheat for bread: "The toil-worn craftsman that with earth-made instrument laboriously conquers the earth and makes her man's. Venerable to me is the hard hand, crooked, coarse, notwithstanding wherein lies a cunning virtue indefeasibly royal as the sceptre of this planet. Venerable, too, is the rugged face, all weather-tanned, besoiled, with its rude intelligence, for it is the face of a man, living manlike—the more venerable for the rudeness, even because we must pity as we love thee, hardly treated brother. For us thy back was so bent, for us were thy straight limbs and fingers so deformed. Thou wert the conscript on whom the lot fell, and fighting our battles thou wert so marred! For in thee, too, lay a God-created form, but it was not to be unfolded; incrustated must it stand with the thick adhesions and defacements of labour, and thy body, like thy soul, was not to know freedom. Yet toil on, toil on! thou art in thy duty, be out of it who may; thou talrest for the altogether indispensable, for daily bread."

The *Country Gentleman* has had a letter from Mr. John Thornton, under date of London, Oct. 25th, in the course of which he gives the results of the leading sales of Short-Horns in Great Britain for 1872 as compared with 1871. The aggregate number sold at auction is not so large as last year, being 1,882 head, against 2,664 in 1871, and the total value is consequently smaller, being £111,044 this year, against £115,396 last year; but the average is over £3 per head higher, standing at £59 each in 1872, against a fraction less than £56 in 1871. Mr. T. writes: "The purest bred specimens of Bates or Booth strains—the two most fashionable at this period—command prices far higher than have ever been yet known. This arises in a great degree from the interest taken by our noblemen and country gentlemen in Short-Horn breeding, and the good-tempered rivalry there exists to obtain the best specimens of each kind. Booth cattle are not so often in the market, and the pure specimens are very scarce; and as the demand is spread over the whole of the United Kingdom, and among all the oldest and most practical breeders in the country, the competition is accordingly equally good. Mr. Booth has more demand for bulls than he is able to supply."

U. S. APPLE CROP OF 1872.—From reports which we receive from different parts of the country, it is evident that the apple crop is large this year. Not so large—at least in Western New York—as in 1870, but large enough to flood the markets of the great cities with perishable fruit which must be disposed of at some rates, or it will rot on the owner's hands. Consequently prices rule low, affording buyers a pretext for keeping down their offers for winter fruit to rates that will not afford orchardists profitable returns for their apples.

Nothing adds so much to the comfort of a garden as dry, firm, smooth walks, free from weeds and moss. More depends than is generally supposed by the uninitiated upon the way the walks are first constructed as to the labour that will afterwards be necessary to keep down weeds, &c. A walk well made will save more than its equivalent in first cost by the reduced labour required afterwards. There is never anything gained in the long run by doing work in a hurry and without system. In constructing a new walk of any given width not exceeding 12ft., dig out the earth 16in. deep, making the bottom slightly concave. Lay a 3in. drain along the

centre in the lowest part, and make sure of a proper outfall; then in the bottom of the projected path lay about a foot of stones, brickbats, clinkers, or any similar material, placing the largest in the bottom, and the small ones on top, making all level by cracking a large one here and there with a hammer if necessary; then place on 4in. of clean, binding gravel, treading, levelling, and making all smooth as the work proceeds, leaving the surface when all is finished, slightly convex, and before it is quite dry pass a heavy roller over it two or three times. Walks of a greater width than 12ft. would require two or more drains, in proportion to the width. It is a mistake to put on too much gravel; 4in. is ample. A thick coat of gravel has a tendency to keep the walks damp, and thus to a certain extent encourages the growth of weeds and moss.

A VESSEL SUNK BY A SWORD FISH.—A despatch from Levuka, the capital of the Fiji Islands, announces the total wreck of the schooner Trent, after having been attacked by a monster sword fish. It appears that the Trent left Levuka on the 28th of December last for a "labour" cruise, and called at Rewa, which she cleared on the 30th. On the 9th of February something struck the vessel, and directly afterwards water rushed into the cabin from a large hole in the quarter. On looking over the side it was discovered that an immense sword fish had attacked the vessel, and was hanging by its sword to the ship's side. The fish was caught, and on it being hauled on board it was found to measure 12ft. in length and 4ft. round the body. Its sword, which was over 2ft. long, had been driven through the planking up to the fish's head with such force as to split the fish's lower jaw. On the 21st March, after experiencing a hurricane of four days, Boham's Island was sighted; and on June 9 the Trent commenced to take in water freely through the place where she had been struck by the sword-fish. The vessel went ashore on a reef, and afterwards foundered, all efforts to stop the leak being futile. The crew escaped to the shore.—*Morning Advertiser*. (Vessels have often been struck by a sword-fish and pierced deeply by the weapon of the fish. There is, or was lately, a piece of ship's timber, shown at the United Service Museum, in which was fixed the rostrum of a large sword fish. In this case the weapon had broken off, and the fish escaped, and as the bone filled up the interstice thoroughly and was tightly wedged, no harm resulted. The sword was driven through the planking and some 9 in. into the stout knee timber of the ship, and hence it was broken off. In the case reported above no doubt the knee timber was missed, and the weapon went through the planking as an iron skewer would through a sheet of paper, and the weight of the fish (from its size perhaps some 500lb. or 600lb.) would probably, in addition to smashing its jaw, splinter the planks and start some of the seams, thus creating a leak which eventually caused the loss of the vessel. It has been supposed that, when the sword fish makes this mad attack upon a ship, it mistakes the ship for a whale, to which creature it is a deadly enemy, and which often falls a victim to its hostility. When in its blind fury, however, it runs a tilt against a ship, it usually finds that it has caught a Tartar, and the smashing of its sword, if not its own immediate capture, generally is the result. Sword fishes have been known to attack men in the water, and there is an instance on record of a man being stabbed to death by one in the Bristol Channel, but this was a small one, weighing something under 100 lbs.—*London Field*.)

Miscellaneous.

Judges at Fairs.

The widespread dissatisfaction which often follows the awards of premiums at fairs is notorious. There is a growing distrust in the fairness and impartiality of these awards and we know of many instances where this feeling or want of confidence has deterred the owners of fine stock from exhibiting at all, and with any statement of their experience, no one can well wonder at this decision. Everybody who has been accustomed to attend these shows must have noticed many instances of real grievance which have arisen from such partiality in making the awards—*Massachusetts Ploughman*.

Sale of Irish Shorthorns.

On 21th Oct. an auction of yearling bull calves was held at Ballywalter, near Castle-town Roche, County Cork, for R. Welsted, Esq. Mr. Welsted is one of the most eminent breeders of bloodstock in the south of Ireland; in fact, many of those who now hold "annual auctions of bloodstock" originally got their stock from Mr. Welsted's herd. It is now some ten years since Mr. Welsted commenced these sales, which he has carried on yearly and with increasing success. The animals exhibited on this occasion were in first-class condition, and the attendance was large and the bidding brisk. Thirteen animals were disposed of for £146, or an average £34, 12s. 4d. per head.

Drought in Eastern Europe.

The Athens journals complain loudly of the continued drought which reigns throughout the country. The heat has been excessive and the fruit harvest has suffered considerably, and the grain farmers cannot make their autumn sowings. Graziers, too, are crying out about the scarcity of hay. A Bucharest letter reports that there has been an entire absence of rain throughout Roumania for the last three months. The farmers will be quite unable to make their autumn sowings, and those which have been already made are everywhere completely burned up by the immense heats. The same letter states that important purchases of grain for Austrian and Hungarian houses have been made in all the Roumanian ports.

Crops in Great Britain

The Mark Lane *Times*, October 14, has an editorial on the crops in Great Britain, in which it is said:

"Almost all the accounts that have come to hand in the past two months, that is, during the progress of the harvest throughout the kingdom concur in declaring a deficiency in the wheat and barley crops—some of them very large, and others by far the fewest, not so great a loss, while anything like a full average is quite exceptional. The general complaint is that though the straw is stout and good (where not lodged), and the ear long, the sheaves are light; and upon examining the ears more closely, they are found to contain sets of two or three instead of three or four, or even five grains, as is the case with a full return. This deficiency may be ascribed to the bad weather in May and June, and especially the severe frosty nights at the time when the wheat was shooting the ear, which destroyed that part that had left the sheath."

A Remarkable Vine.

Mr. Jardine, of Arkleton, in Scotland, has a vine of nine years' growth, which has borne a bunch of grapes in each of the last five years, varying in weight from 17 lbs. to 19 lbs.; and in the present year, the bunch, not yet cut, is considered the largest yet produced upon it. This extraordinary bunch was exhibited at the International Flower and Fruit Show at Burnbank, Glasgow, which was, without exception, the largest and finest exhibition ever seen in Scotland. A Scottish local paper says:—"There was exhibited, probably, the heaviest bunch of grapes grown this century, rivalling the prodigious bunch of Speechly's, which weighed about 19 lbs. This famous bunch was grown in the gardens of the Duke of Portland, Wellbeck, last century, and from that time we have had nothing on record to match it with. The sample from the gardens of Mr. Jardine, Arkleton, Dumfriesshire, which weighed 19 lbs 6 oz., so heavy as to be too ponderous to carry a little way upon the board upon which it was fastened."

Carefulness in Old Age.

An old man is like an old waggon; with light loading and careful usage it will last for years; but one heavy load or sudden strain will break it and ruin it for ever. So many people reach the age of fifty or sixty, or even seventy, measurably free from most of the pains and infirmities of age, cheery in heart and sound in health, ripe in wisdom and experience, with sympathies mellowed by age, and with reasonable prospects and opportunities for continued usefulness in the world for a considerable time. Let such persons be thankful, but let them also be careful. An old constitution is like an old bone—broken with ease, mended with difficulty. A young tree bends to the gale, an old one snaps and falls before the blast. A single hard lift, an hour of heating work, an evening exposure to rain or damp, a severe chill, an excess of food, the unusual indulgence of an appetite or passion, a sudden fit of anger, an improper dose of medicine—any of these, or other similar things, may cut off a valuable life in an hour, and leave the fair hopes of usefulness and enjoyment but a shapeless wreck.

British Crops of 1872.

Mr. James Caird, in a letter addressed to the *Times*, gives a review of the food prospects of the country. The results of the almost incessant rains which were experienced in nearly every district of the United Kingdom during summer and autumn, have been a very inferior crop alike of grain, potatoes, and root crops. He estimates that the imports of grain and potatoes from foreign countries will require to be greater than for any previous years. He also refers to the fact that the prospects of the next year's wheat, crop are very unfavourable. Comparatively little ground has yet been seeded with wheat and the saturated state of the soil will now render sowing extremely hazardous until the spring months. He suggests that the lighter and drier lands on every farm suitable for wheat should be seeded as early as possible, and that the heavier and damp lands should be seeded in spring with what he terms "spring corn," presumably barley and oats. Those farmers who intend to act on Mr. Caird's advice may require to obtain the consent of their landlords before they deviate materially from their former practice, otherwise they may incur penalties, or at least be compelled to appear in court.

A British Test of Good Farming.

Mr. Mechi says that, according to the reply which a farmer will give to the following question, his position may be determined, even without visiting his farm. The question is, "How much meat do you make per acre over the whole acreage of your farm?" This is a matter, says the *Irish Farmer's Gazette*, which very few men think of, and yet, as Mr. Mechi says, it is really a testing point. Mr. Campbell has ascertained that the number of pounds of meat produced and sold off his farm annually amounts to 66 402 pounds, or 221 pounds per acre. Now, Mr. Acland stated in the *Journal of the Royal Agricultural Society of England*, "that the largest corn-growing farmer in Norfolk—a most successful man, produces ninety pounds of meat on every acre of his land," and Mr. Mechi asserts that "the general average of the farms of this kingdom certainly do not produce twenty pounds of meat per acre over the whole farm," and he adds, "it is the key to good crops." The production of meat on good fattening pastures in some of the best grazing districts in Ireland is estimated at 160 pounds per acre. The production on Mr. Campbell's farm is over 220 pounds per acre.

Sound Ideas on Farming

The following views on farming were thrown out in a lecture at Baltimore, and they so entirely cover the ground of successful culture, that we give them a place for the benefit of our readers:

1. That the area under cultivation should be within the limits of the capital and labour employed; or, in other words, that on impoverished soils no one should cultivate more land than he can enrich with manure and fertilizers, be it one acre or twenty.
2. That there should be a law compelling every man to prevent his stock from degrading on his neighbour's fields.
3. That green soil is more economical than loose pasturage.
4. That deep tillage is essential to good farming.
5. That the muck heap is the farmer's bank, and that everything should be added to it that will enlarge it, and increase at the same time its fertilizing properties.
6. That no farmer or planter should depend upon one staple alone, but should seek to secure himself against serious loss in bad seasons by diversity of products.—*Rural South Land.*

Wool at Boston.

Geo. W. Bond & Co, well known Boston Wool Brokers, give the most definite statement of the losses of wool by the Boston fire which we have seen. They estimate the total loss at 12,290,000 pounds, valued at \$4,500,000. It is proper to say that considerable quantities of wool supposed to have been destroyed were afterwards recovered in a damaged condition.

The same firm give the imports of wool at Boston for first nine months of the year as 39,611,990 pounds, a much greater amount than in any former year. The largest quantity from any one country was 11,300,386 pounds from Buenos Ayres.

The *Boston Commercial Bulletin* of Nov. 23 thinks the loss of wool, deducting all that was secured, may possibly be reduced to 7,000,000 pounds. The sales of the week were 350,000 pounds domestic and 600,000 pounds

foreign. A sale of 7,000 pounds Wisconsin wool at 70 cents is reported; 70,000 pounds Ohio X sold at 72 to 75 cents. Some holders refused 72 cents for fine Ohio fleeces. Foreign wools have advanced 4 to 6 cents, and the *Bulletin* claims they could now be reported at a fair profit. The whole market was somewhat excited and unsettled.

Compost Heaps.

It is often recommended that when manure is thrown into heaps in the field it should be covered with a layer of earth to prevent the escape of the ammonia. The experiments of Dr. Voelcker at the Royal Agricultural College at Cirencester, in England, have established the fact that the evaporation of ammonia from large heaps of manure goes on but slightly; for the reason that during the decomposition of the manure certain organic acids are formed at the same time the ammonia is evolved, and then immediately unite with the ammonia, forming non-volatile compound. There is an active escape of ammonia from the interior of large heaps, where the heat is too great for the chemical changes above referred to; but as it approaches the exterior part of the heap, where the heat is very much less, the ammonia is completely taken up by the organic acids and retained. There will be but a trifling escape of ammonia where there is sufficient moisture to retain it, for water absorbs and retains many hundred times its bulk of ammonia gas at ordinary temperatures. These non-volatile compounds, from being highly soluble in water, are liable to be washed away at every rain storm, giving the well known colour to the drainings of manure heaps.—*Ex.*

The Average Lightning Rod a Delusion and a Nuisance.

The damage to property and the destruction of life caused by lightning in New England this summer are almost unprecedented. We regret that so good an opportunity to test the value of lightning rods, and particularly certain kinds of patent rods, has been lost. It would have been of great service to the community if there had been added to every account of lightning striking a building—"This house was furnished with Smith's patent corrugated galvanized double-acting lightning rods," or "This house was unprotected by any rod," as the case might be. It should be generally understood that nearly every patent lightning rod is valueless, if not worse. The fact has been proved a thousand times. They are costly and dangerous. Scientific men have examined the subject, and their testimony is unanimous. It is known, for instance, that the same style of rod is not adapted to all buildings; yet the peddlers of patent rods prescribe the same for every building. Again, the twisted and corrugated rods are worthless. The form, instead of facilitating the passage of electricity, offers an obstacle to it. Tubular rods are less valuable than solid, and unless the rod is large enough the effect is merely to invite lightning, without giving it a chance to escape. In fine, there are many well ascertained facts in regard to lightning rods that ought to be known, and every person whose house is struck should communicate precise information, in order that those who study electrical problems may deduce other general laws, which will be highly useful if we are to have more summers when there are more thunder storms.—*Boston Advertiser.*

The Turnip Crop in Scotland.

It is now painfully evident that the turnip crop in the northern and north-eastern counties is a very inferior one. The season throughout was unfavourable for this crop. The land generally was in a cold soaked state when the turnips were sown. Indeed several farmers in the Buchan district, as elsewhere on clay soils, failed to obtain anything approaching a mould on their turnip break, and only sowed a very small quantity. In addition to the extensive fields of fallow land, miserably stunted crops of turnips meet the eye in almost every district of Aberdeen and Bantshires. Not a few fields show a heavy crop of "tops," but an inspection of the bulb is very disappointing. Throughout these two counties the turnip yield is fully one third below an average, and not more than half the weight of any of the last two or three years' crops. Cake and hay will have to be extensively used in the feeding of stock in the course of the coming winter and spring. Those who have purchased sheep for winter feeding on turnips have great difficulty in obtaining anything like a sufficient quantity of the roots, even at high prices. In Moray, Nairn, and Inverness, the heavy rains were not so ruinous to the crop, the soil being of a more porous character. There however, the bulbs are also deficient in size though not to such an extent as in Aberdeen and Bant. From the Spey to the Beaully the turnip crop is generally not more than a fourth below an average.—*Scotsman.*

The U. S. Corn Crop.

So long as one-fourth of the farmers of the country have corn to sell, and the three-fourths have it to buy, the price of corn, and so much of agriculture as relates to the crop, will be of interest. And here let me refer to the stout varieties—as varieties, so far as yield and profit are concerned, totally unsuited to these latitudes. On the experimental grounds of the Industrial University, the variety of corn known as the "Sauford" succeeded best of all northern kinds. Nevertheless, while the yield of the Sauford did not exceed two or three hundred to one, the best Illinois, Ohio, Indiana and Pennsylvania dents made nearly double that return. The yield of the best native Illinois varieties this year runs from two hundred to one thousand to one. I suppose the average ear of the Illinois corn crop is scarcely less than three hundred to one—I mean that for each grain of maize planted, protected, cultivated and harvested, the yield has been one ear, bearing three hundred grains. What crop makes such a return, especially if we consider the small amount of labour spent in cultivation and the self-protection the plant affords while waiting the convenience and leisure of the grower to be harvested? Humboldt, as quoted by Bonafons, says in some parts of South America they think that crop of maize a poor one indeed which does not return one hundred and thirty to one hundred and fifty times the seed sown. In Central Illinois we should think that crop a poor one which did not return three hundred to one.

These remarks on the yield of the maize plant have been suggested in part by that which I have heard among farmers for the last month or two, as to the future of the corn crop. The opinion is fast gaining ground that we are growing too much corn, and that we must change our agriculture in this regard to some less general and certain crop. Such a change of our agriculture I should regard in the light of a national calamity.—*B. F. J., Chicago Cor. of Country Gentleman.*

English Farming.

Mr Wall, in an address to the farmers of New Jersey, alluded to the very flourishing state of agriculture in England. He pointed out that in less than a century the production of wheat had risen from 10,000,000 to 100,000,000 of bushels. This enormous increase he attributes to the systematic attention to all the requirements of good farming; in the skill and exactness with which all the operations are performed; to their careful selections of the best varieties of seed, and to the extensive and good use of their barnyard manure. Nothing is left to casualty or chance. No expectations are indulged in that the bounty of Providence, by an unusually favourable season, will atone for their short comings or neglect. He dilated upon the liberality of English farmers in restoring to the earth, by means of purchased manures, all those elements of fertility which are exhausted by cultivation. It is estimated by chemical analysis that wheat absorbs 40 per cent. of nutriment contained in the soil. In 1837, the first year in which bones came into general use as a fertilizer, the foreign bones imported were valued at the custom house at 1,500,000 dollars, since which time it is estimated that the amount paid for imported bones alone amounted to 170,000,000 dollars. Since 1811, upwards of 500,000 tons of guano have been used. Mr. Wall also believed that there was nothing more perfect of rural economy than the English farmer's rotation of root and grain crops. He considered that the care which had been bestowed on root cultivation had been the salvation of England.

Farm Matters in France

Farmers are gaining courage that the cattle plague will not return. However, nervous vigilance continues to be the order of the day.

The foot and mouth disease is less troublesome, but has proved chiefly fatal in the case of young stock, bought at high prices to increase and multiply. The disease has also inconvenienced in many cases, in the putting of cattle on grass land to fatten.

The various agricultural colleges and schools have re-opened after the summer vacation. The new admissions are numerous, owing to the fact that a pupil obtaining his diploma can claim the benefit of only serving one year under the flag in time of peace. France has two agricultural schools devoted exclusively to the education of farmers' daughters, so that they may be able to intelligently manage their homes when they become farmers' wives. It was found that when the country girls were sent to city or town schools, they returned home with regret, suffered from ennui, having one aim—to escape from their native village as quickly as possible. They converted, in too many instances, the young farmers to their views also. The terms at these schools are about 500 frs. per annum.

In Belgium the potato crop is excellent; and, like France, a large export trade with England is going on in the excellent. There is more produce than stock to consume it, and fat cattle bring fancy prices. Horses are rare; a good draught horse can readily sell for 1,500 francs. The German scientific agriculturists still continue to hold meetings and compare notes, particularly upon the nutritive value of food, its facility of being assimilated, and the power of animals, following age and race, to so assimilate it.

Farming Life.

Farming is, without doubt, the surest occupation there is. Farmers may not grow rich, but they always manage to get a living for themselves and family, which is more than can be said of any other pursuit. They may grow rich in this as in any other pursuit, according to the degree of intelligence and industry brought to bear. If you desire to see the success of your children rendered sure in life, educate them for the farm. But this word education has a deep significance here, it is the want of this that makes far and away generally so dull, and the attainment of great wealth by farming so rare. There is no occupation of life that will repay intelligence, thought and study better than agricultural work, and it is because intelligence has so little to do with the general farming operations that it is so unattractive to young men, and leads them to forsake it for the professions, or other more intellectual pursuits. Induce your children to take an early interest in the farm, in their implements, and in the stock. Tell them all your plans, and the history of your success and failures, tell them your own history as a boy, but don't harp too much on the degenerate character of the young men of the present age. Praise them when you can, and encourage them to do still better. Give each one a calf or a colt to raise, or a small patch of grain to cultivate on his own account. But above all let them study chemistry, and the laws of breeding in stock. Light your homes brilliantly in the evening with kerosene, and provide plenty of pleasant agricultural reading; encourage your children to dress up in the evening, and encourage your neighbours to drop in, and to talk agriculture—the importance of large crops, good stock, liberal feeding, judicious crossing, the advantages of keeping animals comfortable, judicious rotation of crops, the chemical properties of manure, etc., rather than grumble about hard times and the price of wages. In this way you may make farming an intellectual pursuit, and whatever has intelligence in it will be attractive.

English Farming, Then and Now.

Mr. Mechi, looking at the past and present of English agriculture, expresses himself thus as to the result:

Awakening from her sleep—what a stir at last in agriculture! Beet sugar companies, steam-cultivating companies, land improvement companies, land-damage companies, irrigation companies, agriculture tramway companies, and nobody knows what beside; not forgetting class schools, agricultural colleges, tenant-right and cooperators' Associations. All new in my time, and some predicted by me in my early letters, some thirty years ago.

Cow farming is going out—in fact, has died out in this neighbourhood, where once there was an abundance of them. Why is this? Corn farming has come in, and rents have increased, and Mr. Mechi's false idea about poor grass land has proved to be a correct one. Poor grass land and no cultivation will not pay improved rents and rates and taxes, although cultivation, corn, clover, and artificial grasses will do so. Farmers have gradually realized the fact (previously admitted by me) that cow manure is poor, and will not do good corn (grain) and root crops, like that from fattening animals. The right thing is to breed, feed and fatten, and thus grow plenty of meat and corn concurrently. That is my practice with sheep. Selling lean stock means impoverishing the farm, unless much artificial food and manure are used.

Fertilizing Properties of Bones.

The true value of bones, aside from their importance in the arts for handles, rings, paint, clarifying sugar, etc., is fast beginning to be appreciated in this country. People were horrified a few years since by the published account of the tons of human bones transported from the battle field of Waterloo, to be ground and strewn over the worn out lands of Europe. From time immemorial it has been known that vegetation, and particularly trees, thrive immensely in grave yards.

Now, it is neither the gelatine nor glue that holds the particles of bone together, nor the lime of which they are composed, which gives activity to vegetable growth alone, but the phosphorus in them, that indissoluble material of which matches are manufactured, known in its combination as phosphate of lime, that plants seize upon with avidity as food. Nothing else within the range of agricultural experience so rapidly develops the cellular structure.

To be most useful the bones should be pulverized, and that enables water to make a quicker solution of the phosphate, which the minute rootlets immediately absorb and circulate in the shaft, leaves and fruit. Save the bones, therefore. Let nothing go to waste. There are actual treasures concealed in a dry bone if the right course is pursued to extract them.

Shad-Hatching in 1872.

So far as we know, the only rivers in which shad are hatched are the Connecticut, the Hudson, and the Merrimac, and this is the sixth season of the use of Seth Green's hatching-boxes—a discovery that is likely to do for the food supply of the nation what Whitney's cotton-gin did for its clothing. About 8,000,000 of shad-spawn were hatched in the Hudson last year, and we learn, unofficially, that the number is considerably exceeded this year. Of the number hatched, 220,000 were put into the river above the Troy dam, 50,000 into Lake Champlain, 20,000 in Lake Owasco, 50,000 in the Genesee River, 30,000 in the Alleghany River at Salamanca and 25,000 in the Mississippi River, two miles below St. Paul. The remainder were turned into the river below Castleton. The operations began May 15th, ended July 2nd.

The ova hatched in the Connecticut last year were over sixty millions. This year operations did not begin until the 24th of June, and ended on the 15th of July—less than four weeks. The fish were larger and finer than ever before, and the hatch of spawn was twenty-two million six hundred thousand, a third more than was taken last year. The hot weather of the early part of July had such an effect upon the females, that the average number of ova from each one was greatly increased. Of this number 2,000,000 were sent to the Alleghany, White, and Hatter Rivers, a half million were distributed in Rhode Island waters, a half million were sent to the Saug-tack, and about the same number to Great Brook, in Groton, Ct. All the rest were turned into the Connecticut, just below Hadley Falls. This enormous addition to the hatching tribes was made at an expense to the State of Connecticut of about five hundred dollars. If the improvement of only two of our shad streams for two years has resulted in the reduction of the wholesale price of shad in New York to \$3.50 per hundred what may be expected when all the States turn their attention to this business, and Seth Green's hatching boxes are in use upon every shad stream in the country? Is not cheap food for the coming millions a problem already solved?—*Am. Agriculturist.*

Plants as Weather Guides.

It is well known that certain plants are very sensitive to changes in the atmosphere, and by their behaviour, the opening and closing of their leaves and flowers, &c., serve as natural barometers to indicate the coming weather. A Prussian horticulturist—Mr. Hannemann, of Proskau—gives the signs he has found reliable with respect to the following plants.

The small bindweed (*Convolvulus arvensis*) and the corn pimpnel or poor man's weatherglass (*Anagallis arvensis*) expand their flowers at the approach of wet weather, whilst on the other hand the different varieties of clover contract their leaves before rain. If fine bright weather is in prospect, the leaves of the chickweed (*Stellaria media*) unfold, and its flowers remain awake and erect until mid-day. When the plant droops and its flowers do not expand, rain may be expected. The half opening of the flowers is a sign that the wet will not last long. The burnet saxifrage (*Pimpinella saxifraga*) indicates the coming weather in the same manner. As to the small Cape marigold (*Calendula pluvialis*), should it open at six to seven a.m. and not close till four p.m., we may reckon on settled weather; if the flower continues sleeping after seven, it betokens rain. In the case of the corn and common sow thistle (*Sonchus arvensis* and *oleraceus*), the non-closing of the flower-heads warns us that it will rain next day; whilst the closing of them denotes fine weather. Respecting the weather indications of bladder ketmir (*Hibiscus trionum*), the stemless ground thistle (*Bardus acaulis*), marsh marigold (*Caltha palustris*), creeping crowfoot (*Ranunculus repens*), wood sorrel (*Oxalis acetosella*), and other species of the *Oxalis* genus, rain may confidently be expected when the flowers of the first do not open, when the calyx of the second closes, and when the rest fold their leaves.

We may also look for wet weather if the leaves of the whitlow grass (*Draba verna*) droop, and lady's bedstraw (*Galium verum*) becomes inflated and gives out a strong odour. Finally, the approach of rain is indicated in the case of the yellow wood anemone (*Anemone ranunculoides*) by the closing of the flowers, and in that of the windflower (*Anemone nemorosa*) by their drooping.

T. S.

A Remedy for Tears.

The source of tears has given the great charm to poetry in all ages; sometimes the poet speaks, in his own person, "of grief for friendship unreturned and disregarded love," and sometimes he only sympathises with the woes of others, as when we read of the lovely lady who "let the tears down fall for Jock o' Hazeldean," and would not be comforted. "Why weep ye by the tide, lady?" and Scott describes the patriot weeping for his country in strains that will bear repetition:—

"A child will weep a bramble's smart,
A stripling for a woman's heart;
But woe awaits a country when
She sees the tears of bearded men."

Now, the source of tears which I am going first to describe and then to dry up, has forced the briny tear from every eye, the old and young alike, the bearded veteran and the smiling babe. The cheek of beauty that sets the world on fire is literally bathed in tears at the instance of this relentless agent; yet it has been held in high repute for remote times, for we read of the Jewish people mourning the loss of this among the other

savoury things they enjoyed in the land of Egypt, whither they had been carried to suffer cruel bondage. I have named this to show that for thousands of years the beautiful eyes of a Jew and Gentile, whenever duty has called them to peel onions and garlic, have suffered pain, and shed bitter tears at this simple bit of vegetable dressing. In England we have certain famous localities for our hops, our medicinal herbs, and particularly for our onions. In Bedfordshire the onion is cultivated by the acre, and it seems to suffer rough treatment there with impunity; mauled and trampled on during the process of weeding, it seems to rise to renewed vigour, and we never hear of a failure in the crop in that quarter. Latterly a new branch of industry has sprung up in the way of pickling onions, not in pickle jars, as heretofore, but in 18-gallon casks. The small two-bladed onions and other kinds are pared, cleaned and salted, and put into casks for the wholesale trade; but, gentle reader, think of the slavery, the tears, and the sufferings of those maids, wives, and matrons who peel onions for months together. Well, we read that

"Donald Caird, wi' mickle study,
Caught the gift to cheat the wuddy;"

and so the peeler in Bedfordshire found that when the onion was peeled under water, the eyes were not affected, or only slightly so; and thus one fertile source of tears may be said to be dried up for ever, for as long as any cook can get a basin of clear water and a small sized knife, he or she may peel onions with impunity. I look forward to the gratitude of a discerning public to rank me as a benefactor, not only to those who cook onions, but also to those who eat thereof.—*Alexander Forsyth, in the Gardener's Chronicle.*

* Gallows.

Ostrich Farming in South Africa.

The work of hunting ostriches on horseback has given place—in part at least—to a more systematized mode for obtaining their feathers. The *Scientific American* gives an account of a farm kept by a Mr. Kinnear at the Cape of Good Hope, where ostriches are reared and pastured and picked, much as American farmers' wives do geese. This Mr. K. has an enclosure of eight acres, sown with lucerne, in which he keeps thirty of the Ostrich family, "thorough-breds" no doubt, or at least they will soon be if he is careful in breeding. The pasture is maintained in growth by irrigation, and with a more perfect system Mr. K. says the lot would suffice for one hundred of the birds. Buildings are erected for their shelter and comfort, and to promote success in breeding. When at liberty, the ostrich is polygamous, one male taking five wives or thereabout; but Mr. Kinnear enforces a reform, and couples them, usually in July. In August they commence laying, lay from fifteen to twenty eggs the first season, sit in September and hatch in October. The male takes his turn at sitting, and, indeed, is credited with doing this maternal work with more assiduity than his partner, though the latter is the best nurse. Usually, however, in the domestic state they are raised by hand, and after being dismissed from their young, a few days after hatching, the hens—as is the case with common hens—soon resume laying again.

The food of the young is chopped lucerne, small grains, maize, vetches, trefoil and cabbage leaves, with sand, earth, broken bones, &c., for grinding. As to their eating nails, metal buttons, and such delicacies, it is said to be a fable. In the winter the young are

housed and kept warm by artificial heat. But the ostrich farmers differ in their views as to the best modes of conducting the business. Some simply enclose the birds with high fences, and then leave them pretty much to themselves, claiming that they get better feathered by this process, although it seems to be conceded that the young are not reared so successfully. The first picking is done when the birds are about eight months old, and about once in eight months thereafter. That at least is one statement; but it is stated elsewhere that "three pluckings when in full plumage realized to Mr. Kinnear \$50 per annum per bird." This leaves the number of annual pickings a little in doubt; but the business is evidently a growing one. In 1860, a pair of ostriches six months old were worth only \$2.50; now, one bird soon after hatching will often bring \$25, and those of three or four months \$40 and \$50 each. In 1870, the exportation of ostrich plumes was 29,000 lbs., valued at \$435,000, or \$15 per lb. The yield per bird in weight of feathers is set down, when in full plumage, at one-fourth of a pound; but as this would be worth only \$3.75 a picking, it conflicts seriously with the statement above that Mr. Kinnear's birds were worth \$50 a year to him for feathers, picking once in eight months! We shall not try to reconcile the matter, but must conclude that, from the accounts, the facts as to ostrich farming are a little confused.

Quantity of Food to Eat

People often ask us "What is the proper quantity of food?" This depends very much on what the food is, and who the person is, and what his pursuits are. We doubt not that most people who have the means eat a third more than they really need, and we venture the assertion that if each man of good constitution and health could begin at twenty-one, having been properly fed to that time, he might live to be seventy or seventy-five years of age and not need the aid of a doctor at all. We believe that nine out of ten could do so. But just how a person should live to avoid entirely all causes of disease, no man, perhaps, is wise enough to prescribe. It may be safe to assert that most people who are healthy and hearty eat a little more at every meal than they should. That sense of fullness, that extra heat of the face, and the inclination to be sleepy after a meal, show that it has been too heavy. Most people eat too rapidly, and take in more food than they are aware of.—The appetite is not allayed, and they eat as long as they can hold it, because the taste is good.

Suppose one were to eat parched wheat or corn; were obliged to masticate it, moistening by the saliva, having no coffee, tea, or water "to wash it down," he would not be likely to eat too much for several reasons, the chief one being, that while eating so slowly, his stomach would begin to appropriate the food, some of the juices of the food would be absorbed and carried into the circulation, and the appetite would be partially satisfied before he had finished. Moreover, there would be a mechanical satisfaction on the part of the stomach. It would take a man perhaps three quarters of an hour to eat as much of that kind of food as would satisfy him. Then he would get exercise enough for his teeth, so that they would be healthy, and all the glands of the mouth would do their work. The stomach would come into healthy action, and the person would be satisfied as soon as he had eaten enough. Doubtless he would eat but little more than half as much in that way as he would to have the wheat ground and made into mush, that could be eaten without the

use of the teeth, and a surfeit obtained before the stomach had time to respond.

Persons, generally, who are fat, and are anxious to reduce their flesh, can do so by eating a third less of food than is their usual habit. Some would have to reduce the amount one-half to bring them to a proper standard. This plan would require self-denial; but people undergo, through self-indulgence, and its consequent vexation and annoyance, ten times more to mitigate or rid themselves of trouble than would be necessary to avoid it altogether.

A lady once came to us for a phrenological description, whose face was thickly covered with pimples, fiery red blotches, like musquito bites. Thinking we could hardly do her a better service, we asked, at the close of our phrenological description, if she would like to be rid of those pimples. She started with delight and hope, and said, "Certainly; what shall I put on?" We replied, "Nothing; but eat less sugar and butter, eat lean beef and fruit, and keep clear of griddle-cakes and their accompaniments for three months, and your face will be clear and fair." In one month after she came in without a pimple on her face, to show us what virtue there was in our simple prescription.

We eat too much. We eat the wrong articles of food. We have pimples, bilious fevers, headaches, dyspepsia, kidney complaint, liver difficulties, and rheumatism. The old rough statement that "men dig their graves with their teeth," has more truth than poetry in it. If men would use their teeth properly, they could postpone the time for having their graves dug for many years.—*Herald of Health.*

The Prince of Wales among the Warwickshire Rabbits.

His Royal Highness the Prince of Wales, attended by General Probyn and accompanied by the Duke of Beaufort and Colonel Owen Williams arrived at the quiet little station of Hampton-in-Arden on Wednesday evening shortly before six, and were met by the Earl of Aylesford. The persistent rains had passed away, and the weather was clear, frosty, and exhilarating. The drive to the hall, through a lovely Warwickshire bye-road, was accomplished in a little over 20 minutes. The following noblemen and gentlemen had been invited to meet the Prince:—The Duke of Beaufort, the Earl and Countess of Bradford, Earl Cowley, Viscount and Viscountess Royston, Lord and Lady Grey de Wilton, Viscountess Dangan, Lord Charles Beresford, the Hon. Oliver Montague, Colonel Owen Williams, Mr. Bernal Osborne, M.P., and Mr. Montague Guest, M.P. On Thursday, notwithstanding the unfavourable weather, the Prince of Wales, attended by the Earl of Aylesford and seven other members of the company at Packington, in a nine guns, issued from the Hall, and, accompanied by 60 or 70 attendants, bent their steps towards that part of the park in which the old hall is situated. Here were the rabbit covers large patches of rank fern, three or four feet in height, and extending over many acres. The doomed rabbits and hares, assiduously driven from the burrows during the preceding week by the keepers, forced from their lodgings beneath the tree-roots by the suffocating fumes of sulphur, and deterred from returning thither by the application of gas tar to the "runs," had been forced to seek shelter in

the fern patch; and here they literally swarmed. At the edge of the ferns a halt was called, and Mr. Hyatt, the head gamekeeper, proceeded to arrange his assistants in the most improved beating fashion. The shooting party, nine in number, including the Prince, distributed themselves in advance of the line of beater, and the word, "Forward!" was given. Simultaneously the line of beaters moved into the cover, vigorously thrashing the long ferns with their stout sticks, and giving vent to a variety of uncouth ejaculations, which it was supposed were calculated to terrify the hidden rabbits. Hardly had the beaters proceeded half-a-dozen yards within the cover in front of them became violently agitated, and rabbits were seen running in all directions. The quantity of game thus started was little short of marvellous, the very ground seeming to be alive. Simultaneously with the appearance of the terrified animals the slaughter commenced. Each sportsman carried a double-barrelled breech-loader, and an attendant followed him closely, bearing an additional gun, ready loaded. The shooter discharged both barrels of his gun, in some cases with only the interval of a second or two, and immediately exchanged it for a loaded one. Rabbits fell in all directions. The warning cry of "Rabbit!" from the relentless keepers was heard continuously, and each cry was as quickly followed by the sharp crack of a gun—a pretty sure indication that the rabbit referred to had come to an untimely end, as the majority of the sportsmen were crack shots. His Royal Highness blazed away in all directions, with the utmost sang froid, and appeared to be enjoying himself amazingly. Lord Charles Beresford also fully upheld his reputation of a dead shot. One patch of fern was at length bereft of its inhabitants, and the slain were piled in heaps. Warning to the work, the noble sportsman hastened to the next cover, and death and destruction were dealt out at a fearful rate. Now, however, the rain again commenced to fall with renewed fury, and the sportsmen experienced the greatest discomfort from the cold biting shower. They continued their pastimes nevertheless, although the chances were much more in favour of the escape of the rabbits than at the commencement. To add to the difficulty of correct shooting, the smoke from the guns clung to the ground in dense volumes, and drifted slowly along in front of the sportsmen. Occasionally a charge of shot would whiz by the face of one of the beaters, so closely, as to impress him with the idea that his life was placed upon a rather precarious tenure. No mishap, however, occurred, and the sport went on smartly enough until 2.15, when the party adjourned for luncheon to the old hall. The beaters were regaled right royally in an upstairs room, and the flagons of Packington ale they quaffed to the health of the distinguished visitors were numerically great. During luncheon the head gamekeeper announced to the sportsmen that the result of their morning's work was the death of 398 rabbits and two pheasants. At a quarter-past three the shooting was recommenced, and continued until darkness set in. During the whole afternoon the rain fell without cessation, and the turf of the park was converted almost into a quagmire. On enumerating the slain which had been "bagged," the figures stood thus:—Rabbits 797, pheasants 2, and 1 hare. A considerable number of dead rabbits were not collected by the beaters yesterday, and they will be sought for this morning, when the number is expected to be increased by fully 160. Even this large number is not considered "a good day's sport," it being related that more than a thousand had before now fallen victims in one day to an equal number of shooters."

Hints about Cheap Greenhouses.

BY HENRI HENDERSON.

I find so many inquiries coming in at this season of the year about the heating and general construction of cheap greenhouses, that I am compelled to give instructions which are known now to nearly every one in and around our large cities. Yet, simple though the matter may be to us who see so much of it, it is evidently perplexing enough, when they come to construct, for those who have nothing to copy from. Those of us who write on such subjects too often take for granted that those for whom we write know something about the matter, when for the most part they really know nothing.

The cheapest kind of construction is a lean to (already described by me in the *Agriculturist* for February, 1872)—that is, where there is anything to lean it against, such as the gable of house or barn. But if the greenhouse has to be constructed entirely new, I think the ordinary span-roof is best. The walls are four feet high, formed of locust or cedar posts. To the outside of these are nailed boards—rough hemlock will do, if appearances are not considered. To the boards is tacked the ordinary tarred paper used by roofers—a cheap article, and an excellent non-conductor of heat. Against the paper is again nailed the outer or weather boarding. This makes really a better wall for greenhouse purposes than an 8-inch one of brick, as we find that the extremes of temperature of the greenhouse—inside at 50°, and perhaps 10° below zero outside—very soon destroy an 8-inch solid brick wall, particularly if exposed to the north or west. A wall of wood constructed as above will last for twenty years, and be as good a protection as one of 8-inch brick. So much for the construction of the frame. The roof is formed by the ordinary sashes, six feet in length by three feet in width, which can be bought ready made, or easily be made by a carpenter or any one handy with tools.

Such a house, if cheapness is an object, should be heated with a flue. It should not be more than 60 and not less than 30 feet in length; if more, the flue would not heat it enough, and if less, it would be likely to get too much heat. About 50 feet by 11 is, we think, the best size of a greenhouse to heat with a flue. The flue should run all around the house—that is, it should start along under one bench, cross the end, and return under the other bench to the end where it begins, making the length of flue in a greenhouse of 50 feet about 110 feet long. It should have a "rise" in this length, from the furnace, of at least 18 inches, to secure a free draft. For the first 25 feet of flue nearest the furnace it should be built of brick, forming an air-space inside of about 7 by 7 inches. From this point (25 feet from the fire) the flue should be formed of the ordinary drain-pipe cement or terra-cotta. The former is to be preferred, and that of 7 or 8 inches diameter is best. The drain-pipe for flues is now almost exclusively in use here wherever flues are used, and it is found not only to be much cheaper, but better for rapid radiation than brick. The cost of a plain greenhouse so built, complete, in this section, is about \$6 per running foot—that is, one 50 feet long by 11 feet wide costs about \$300.

The use of tarred paper for the walls or drain-pipe for the flues of greenhouses is not given in my "Practical Floriculture."

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