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The Field.

Night-Soil.

[We have received the manuscript of the following essay, which was read at the winter meeting of the Connecticut State Board of Agriculture, by Mr. W. H. Yeomans, of Columbia, Conn. It relates to a subject which we recently brought before our readers in an article headed, "A Valuable but Neglected Manure;" but "line upon line" is needed in regard to this matter, for people in general are wonderfully lethargic in reference to it It is high time that economy and health should be duly consulted in the conservation and use of the material to which the subjoined essay relates.]

So long as vegetation exists upon the face of the earth, exhaustion of the soil will be a consequence, and this must be provided for either by natural or artificial means. Where the agency of nature alone exists, acting towards the end of exhaustion, she also provides the means of restoration; so that, although the trees of the forest grow and wax exceedingly great, or the herbage of the fields increases in luxuriance, the trees shed their foliage and dead branches, and if left undisturbed the herbage also decays and falls to the earth, and hence the elements of which it has been divested are returned, with perhaps an additional accumulation from the atmosphere. Therefore, if this were a universal law man's ingenuity would not be taxed to devise ways and means of restoring lost fertility; for where crops are taken from the soil and appropriated, so that their elements go in a different direction, so far as the soil is concerned it amounts to *lost fertility*.

The subject of manures of all kinds is one that has engaged the attention and serious study of the farmer in all the long ages that have passed; and yet to-day its importance, and the necessity for study and investigation, are no less than at first. The great desire is to know how, by the use of manures, the waste places of our land may be made fertile and luxuriant, capable of benefiting the owner as well as adding more to the general ornamentation of the farm. Of all the various kinds of manure which might be considered it is the purpose of this communication to present, in as brief a manner as possible, *Night-soil; its saving and uses*. There is probably no fertilizing substance that is more universally allowed to go to waste than this, and yet its value is almost incalculable. Undoubtedly one great reason for this enormous waste lies in the fact that where proper absorbents or deodorizers are neglected to be applied, the great unpleasantness of manipulation deters many from any attempts to utilize the same. But the waste is not confined alone to the farmers of the country; it is in the cities, with their immense population, where the waste is most complete and enormous. A writer has said with a great deal of truth, "Manures of inestimable value are carried from the cities by rivers and lost in mid-ocean." Guano has ever been looked upon as the great concentration of fertilizing material; and yet night-soil, with all its valuable principles held for man's use, occupies no mean position even in comparison with guano. Jonathan Laurence stated at a meeting of the Vermont Board of Agriculture, "that the waste from the kitchen and the contents of the water-closet, if properly composted, would be of greater value than the same amount of many of the commercial fertilizers that are bought at a high figure by our farmers." Professor Hilgard, of the University of Mississippi, in a lecture before the Marshall Company Industrial Association, stated that "all the products of our fields, excepting a portion of the seed crops, ultimately go to serve as food or raiment to man. Hence man's excrement, rags, paper, and bone, must and do contain the ingredients withdrawn from our soils, and were we faithfully to return all these things in the proper form and in the right place, we should need no guano islands to eke out the deficiency in the return made in the offal of crops and manure of cattle."

Prof. J. F. W. Johnstone says of it, "Night-soil is the most valuable of all the solid animal manures. When dry few other solid manures can be compared with it weight for weight. Dried night-soil is equal to thirty times its bulk of horse manure." It is necessary first to establish the value of an article, or else it is the height of folly to expend labor in attempts to save it. Therefore, unless we first establish the value of night-soil as a fertilizer, we should not be prepared to recommend its saving and use. There are hundreds of millions of people who till the soil for a livelihood, and whom we look upon as far beneath us in the scale of progress, enlightenment and civilization. We depend chiefly upon our barn yards for our fertilizers. Those millions have no cattle and no barn-yards, and yet they supply annually sufficient manure to insure a good crop. The same resource that they employ is at our command. They use it, and we, almost without exception, refuse it. We have no desire to recommend all the practices of the Chinese and Japanese, but it may properly be asked whether we may not learn a valuable lesson from their diligence in saving manures. An important item in their practice is carefully to save every particle of human excrement with which to fertilize their lands.

As Professor Hilgard has expressed it: "The Chinese and Japanese save man's excrement to the letter, and their crops seldom fail: their soils seem to be fresh all the time. Why cannot we, with all our boasted enlightenment, do as much?" It is said that when visited by friends a failure to leave on the premises either solid or liquid excrement is considered a great slight, and therefore the practice is adhered to with the utmost exactness.

This kind of manure is almost their entire dependence, and from this source a greater number of persons are supplied with food from a given area than are fed from a similar extent of surface in any other portion of the globe.

In the privy vault is to be found fecal matter derived from flour, eggs, beef, cheese, pork, beans &c., salted and peppered, and containing all the elements that are calculated to produce highly nutritious food; and since in case of animals the value of the manure depends largely upon the food consumed, how highly valuable must be human fœces which is derived from such food.

The laws of China, it is said, forbid that any human excrement or urine should be thrown away, and reservoirs are placed in every house in which they are deposited with the greatest care. No other manure is used in their corn-fields. Says Liebig—"If we admit that the liquid and solid excrements of man amount on an average to 547 pounds in a year, which contain 16.41 pounds of nitrogen, this is much more than is necessary to add to an acre of land in order to obtain, with the assistance of the nitrogen obtained from the atmosphere, the richest possible crop every year." Think of this ye men who have families containing six or eight individuals—fertilizing in the best possible manner as many acres, when in all probability the same is at present but poorly applied if employed at all.

If the fact be so, is it not a proper subject for consideration? Let each farmer resolve that in the future, so far as lies in his power, he will endeavor properly to save and economically use all the excrement of the family, both solid and fluid, and what wealth will be added to our commonwealth!

In an Essay upon Manures published in the Iowa Agricultural Report for 1872, is found this language: "The economic relations of night-soil is one of the most important questions that demand the attention of the agriculturist; and not until its importance is fully appreciated will the exhausted lands of the East regain their lost fertility, and the steady impoverishment of our western prairies cease" If the saving and use of human excrement is the wonderful alchemy by which the deteriorated soils of New England are to be restored to their original fertility, much gratitude ought to be felt and expressed too towards those individuals who by experiment or otherwise have discovered its great value. Waring, in his book for young farmers, remarks, "Night-soil, or human excrement, is the best manure within reach of the farmer." And so evidence might be accumulated upon that point from every one who has ever carefully husbanded and properly applied this substance as a fertilizer It has been estimated that the night-soil of England in the course of a single year is equivalent to 5,000,000 tons of the best guano. Allowing an average of 500 pounds of solid and liquid excrements to each individual in the United States, and the population to be 40,000,000,

we have 10,000,000 tons of this fertilizing substance; and allowing guano to be twenty times as valuable as the combined solid and liquid excrements, we should then have fertilizing matter eqivalent to 500,000 tons of guano; but the population of the United States being about twice as great as that of England, with the same proportionate estimate as for that country, the value of our excrement would be equivalent to 10,000,000 tons of the best guano, even taking our moderate estimate, and we are fully satisfied that by its full return to the soil incalculable advantage would be derived.

Having thus established, as we believe, the value of night-soil, it only remains to speak of its saving and use.

As before intimated, the great waste of this valuable substance is owing partially to its extremely offensive odor when fresh, and partially to a prejudice some have that it affects the quality of whatever is grown upon it. The first of these objections can be readily met and provided for by the exercise of a little care, which is the very thing necessary to retain its full value; for with the offensive odors the volatile portions are escaping, and its strength and value as a fertilizer correspondingly diminishing. All that is necessary to prevent this is to use deodorizers and absorbents, of which there are a great number, all effectual, and if freely used all unpleasantness is speedily removed, so that the compost, if it may be called such, is as inoffensive as dry earth alone. Probably the earth-closet system is the most perfect that has yet been devised, but it is not absolutely necessary that the earth-closet itself should be used; the application of that principle in the most convenient manner that is effectual is all that is required, *i.e.*, an application of dry earth in such quantities as to fully absorb all the gases of the urine and unpleasant odor is all that is necessary, provided it be so that it is beyond injury from the weather, rains, &c.; therefore if the privy is to be used it should be provided with a tight box or trough to receive all droppings and the application of earth, which should be made often—in point of fact every time the privy is used—and when filled removed to some place of secure deposit or else immediately applied to the land. Or a vault of sufficient size to hold a year's supply could be constructed of brick and water cement, and so the removal of the contents be made at one time. It is well known that by exposure large quantities of ammonia are allowed to escape, and its value as a fertilizer greatly diminished; this is more particularly true in the summer months, or in warm weather, when decomposition rapidly takes place and the ammonia in larger quantities passes off into the atmosphere than in the winter months. The sulphates are also dissipated as sulphureted hydrogen, and the process is so rapid that it only requires a few days to be completed; therefore the necessity of providing some efficient means of preventing this escape can be readily seen.

With an ordinary family, say of five or six persons, some two or three, or perhaps more loads of fertilizer can be made in the course of the year by the use of dry earth, coal ashes, gypsum and other substances. And while the value of the contents of the privy vault, with all their losses from constant exposure, have been considered by those who have used them of great value, by adopting the use of absorbents the quantity can be largely increased, and still the value of the whole be equal to equal quantities of the pure article subject to exposure.

Nash, in his "Progressive Farmer," has said that "night-soil should be removed to the land every spring. Its value as a fertilizer is greatly *increased* if mixed with six or eight times its bulk of dried peat or swamp mud. Its value would be still *more* increased if this could be added every day, and also a little plaster. It is valuable for all kinds of grains and grass lands. In whatever form it is used it should be spread *thinly*." Now as regards its use it may be applied to any growing crop, but must be used with great care. It is hardly safe to apply it with the same liberality that might be or is usually employed in the distribution of other manures. A use of this manure for some years upon various crops and upon different soils has amply proved that a comparatively small quantity will answer equally as good or a better purpose than large quantities of stable manure.

We have used this manure at the rate of about a pint in the hill for corn and obtained equally as good, and sometimes apparently better, results than from the use of a shovelful of stable or hog-yard manure. We have also used the same upon potatoes, placing a still less quantity in the hill, and obtained the best results. During the season just passed we desired to test two or three new potatoes which we had obtained, and therefore used this fertilizer on a small scale by putting not more than half a pint of the manure in each hill, and upon land too that had not been previously manured for a long time; and yet the comparative result was better than when a shovelful of hog manure was used upon a field that had been previously heavily manured for two years for corn.

Again, a privy vault used by a tenant that had been uncared for and wholly exposed for a year was emptied, and its contents mixed with from five to six times their bulk of fine chipdirt, and the same being thoroughly incorporated immediately applied to a field of corn, at the rate of about a pint of the mixture to each hill, and the corn dropped directly upon it. The piece was greensward, and had not been ploughed for many years, nor had it been top dressed further than the usual droppings of the cattle as they fed upon it in the fall. The corn where the privy manure was used was equally as good as where a handful of phosphate had been used. Had the chip-dirt been applied regularly as the privy had been used, its value would undoubtedly have been much greater. We have very often used this upon corn in very moderate quantities and long since become fully convinced of its great value. In some cases our application has been moderate—very moderate—and yet good results have followed In no case has a failure ever attended our use of it; in fact, we consider it one of the best concentrated fertilizers that can be employed. Our practice has been to use what earth, chip-dirt, sods, &c. were at hand, to throw them into the vault, and then when cleaned out mix with it some three or four times its bulk of sand, dirt and refuse, and let it stand a little time, and then incorporate the same as it is thrown into the cart. There is no doubt but that it may be profitably applied as a top-dressing to grass lands, and although we have no remembrance of having tried it in that way, the effect upon a spot of meadow where we completed the composting of a heap and yet scraped up all that was possible, was sufficient to satisfy us that such an application would be the most satisfactory. Where earth-closets or simillar contrivances are used this might be the most profitable application that could be made—spreading the accumulations whenever it becomes necessary that they should be removed. When this is not desired to be done it would be well to have a proper place constructed, away from all exposure to the weather, where the accumulations may be deposited until required for use. It is no less important that the urine should also be saved, for it is equally as valuable as the solid excrement, although even not as much employed as a fertilizer.

The accumulations of the night-chamber are usually thrown at some convenient point where no benefit is derived, and yet a cask could be placed in some out of the way locality in an out-building where all urine and slops could be deposited, and as occasion required spread upon some field near at hand. All the valuable properties are at once taken up by the growing plant, the same being in the best possible condition for being received by it.

Another practice which we have followed to a considerable extent, and one which we would recommend to all is to furnish a quantity of earth and compost material, depositing it under cover, and of easy access where the slops of the house are daily deposited, and so absorbed. When the same is sufficiently saturated it can be removed and the operation repeated, being careful to have the same fully prepared before the setting in of winter. Another method is, instead of placing the absorbent in a pile put it in barrels into which the urine is to be poured, and which can be emptied as desired. In this way a large quantity of valuable material can be accumulated.

A gentleman who has practised this to some extent remarked in our hearing that in that way, in the course of the year, he could make from fifteen to twenty barrels of fertilizer, and that he would rather have barrel for barrel than superphosphate.

Some years since we tried the last-mentioned method by filling at the commencement of winter a barrel with coal dust, upon which urine was poured until the same was thoroughly saturated and frozen solid, when it was discontinued. In the spring the preparation was used to plant corn, by putting about one pint in the hill, dropping the corn directly upon it. The result was that hardly a spire of corn made its appearance; it had been as thoroughly killed as it would have been with the same amount of the best guano The piece was planted over, however, by striking into the hill with a hoe, dropping in the corn and again covering. This time the corn came up, grew vigorously, and maintained throughout the season the darkest and richest color of any corn we ever saw

This satisfied us as to the great value of urine as a fertilizer. The past season we tried chip-dirt saturated in this manner, side by side with superphosphate, with very nearly equal applications in quantity, and could discover no appreciable difference in the growth of the corn or in the general result; of the two, that where the urine was used, as in the previous case, was of a deeper and richer color while growing. We have for several years used this material almost wholly in the garden, and sometimes upon vines in the field, and always with success.

Now if these substances, as we believe has been proven, do possess such valuable fertilizing properties, and have in the past been generally neglected and allowed to go to waste, is it not high time that in economical use be made of them, and so the alleged deterioration of our soils not only be arrested but their fertility in a great measure restored? Is not this better than to make the excessive expenditures for manures and commercial fertilizers which are now made?

This is a subject of the greatest importance to the farmer, and should receive his careful consideration.

Rye as a Fertilizer.

In the April number of the *Maryland Farmer* is a paragraph headed "Best Tobacco Fertilizer," which makes the statement that Dr. Riggs of Hartford, Connecticut, recommends rye as a good crop to fertilize tobacco ground, when turned under before ripening This reminds me of having once made a very satisfactory trial to the same effect, which having no occasion to repeat, however, I speak of only as in some measure corroborative of Dr. Rigg's practice of ten years.

Nothing is more sure than the fact that for any extended and general system of improving our poor lands, we must rely mainly on the growth and direct application of suitable green crops to the purpose of fertilizing them.

Another thing is as certain, that a great deal of the land we should improve is below the point at which clover alone can be profitably used upon it. Moreover, we know, to our sorrow, that of late years the growth of clover has become very unsatisfactory, and that on our best lands it is rare to see a really fine field of clover. Greatly and deservedly as it is valued, therefore, there is urgent occasion for some crop or crops to stand in a measure in the place of clover, and to supply its deficiencies. While rye cannot compete with clover in fertilizing qualities, it will make very considerable growth on ground where clover seed would be thrown away. Being a most vigorous grower, it avails itself promptly of favorable circumstances, and especially responds to the use of the nitrogenous and phosphatic fertilizers. A moderate use of one of these is a perfect insurance almost of a heavy growth of rye on the poorest ground. That such a growth turned well under would add very largely to the fertilizing material of the soil, and at the same time act chemically upon its mineral constituents, is more than probable.

A very material advantage of this over summer growing crops is the fact that, making its growth in fall and very early spring, it may be made so quickly available for fertilizing purposes. We wait two years for clover, but rye sown in September is ready to be ploughed down by first of May. It makes all its growth between the time of cutting tobacco in fall and planting again in early summer. There is no one of our summer grown crops that may not have the advantage of this green crop.—*Cor. Maryland Farmer.*

Making Manure for a Grass Crop.

Make a large compost heap mainly of stable manure and muck, or good rich soil, with plenty of sulphate of lime (plaster), then a small addition of sulphate of ammonia and sulphate of potash, mix all thoroughly together and cover the pile from the rain until wanted for use, say at least ten days or two weeks; in the meantime prepare the fields for sowing or planting the seeds, then spread and harrow in the compost and plant immediately. If a crop of red clover is grown it will, without any addition of nitrogenous manure, make several good forage crops, and then the sod when ploughed in will supply to the soil sufficient ammonia to dispense with the sulphate of ammonia in the next compost heap; but the compost heap must be made for each crop. By thus adding sulphates instead of nitrates to the compost heap, you have a more permanent and less wasting fertilizer, and yet it is sufficiently soluble to be assimilated by growing plants. The sulphate of ammonia is much better for a leachy soil than the nitrate of soda, as the latter is so very soluble that its nitric acid in heavy rains is sunk so deep in the soil as to get beyond the reach of the young plants.

Grasses and Forage Plants.

The New York Farmers' Club on Orchard Grass and Clover.

At a recent meeting of the N. Y. Farmers' Club, a discussion took place about Orchard Grass and Clover The President, Mr. N. C. Ely, read a paper on the subject, in which he advocated sowing orchard grass from the 20th of August to the 11th of September in the climate of Western New York, which is very similar to that of most of Western Canada. He also gave an account of a successful experiment in the way of sowing red clover along with orchard grass in the early fall. Orchard grass grows in bunches or stools, and something is needed to grow with it which will fill up and cover all the ground. Red clover is early enough to cut about the same time as orchard grass, but Mr. Ely had never known of it being sown in the fall successfully. So last fall he tried it and the result was highly satisfactory. Both the orchard grass and clover made a good growth last fall, stood the winter well, and started early in the spring. Mr. Ely depends on orchard grass as the first green thing for soiling. He commences its use by mixing it with dry feed, sparingly at first and more freely as cattle become used to it. It comes nearly two weeks earlier than clover, but for a main feeding crop, they cut very well together. The *New York Herald* gives the following synopsis of the discussion that followed the reading of the President's paper:—

Mr. Todd observed that if clover seed is sown the latter part of August or about 1st of September, a good crop may be expected. It will fail if put down before. It may be sown at the end of August in good rich ground.

Mr. Williams inquired if the grass exhibited was the growth of last fall.

The Secretary stated that it was fall growth, and had stood through the winter and spring.

Mr. F. D. Curtis said that the orchard grass was not identical with [illegible] grass. The [illegible] of the formation of the roots make it [illegible] life, and gives to a large amount of vitality. The specimen exhibited was the product of one seed, and was pulled this spring. The single root would form in the course of three years a sod of this [illegible] as a peck measure in circumference. If it is [illegible] up during the summer it would start and continue to grow until the snow fell. It is, he said, the best grass we can grow for forage.

Dr. Thomas, of [illegible], said he knew of farmers having a passion for sowing grass in orchards, but they [illegible] the cultivation of it in other parts of their farm. There was, however, no use in sowing clover and orchard grass together.

Mr. [illegible] [illegible] it would never do to sow clover in the fall.

Mr. Williams said that clover was a tender plant, and frosts [illegible] clover were covered with snow during the winter, so as to save it from frost, it might [illegible] sown clover early in the winter, so that it had an opportunity of getting well into the ground, and he had been generally successful in his crops. In [illegible] it is better to sow in the early autumn. [illegible] spring there is generally dry, and when the crop was sown late, it was apt to be a failure. With regard to orchard grass and others of a perennial character, they should be sown with clover.

Curing Fodder Corn.

Last year I cured something over an acre of Southern white, fodder corn, a heavy growth, in a way that was new with me and which proved quite satisfactory notwithstanding the very unfavorable weather. I had previously cured it by shocking it in the field, and intended to treat this in the same way; but a severe shower with wind laid it all flat just before it was fit to cut, and so twisted the stalks that it would not stand up. I was 'driven to the wall,' and went with reluctance. The corn when cut was laid in bunches large enough to make medium sized bundles, and without waiting for it to wilt, it was bound near the buts with straw and placed upon the wall single or two bundles deep as to size, and so that they might balance as nearly as might be. The buts were all placed to the north or west because more difficult to cure than the leaf, and that they might be more exposed to the dry winds. And I thought the bundles would be less liable to be blown off, as the easterly winds are usually damp. Scarcely any of it did blow off.

The corn was planted at different times, and I began cutting during the last week in August. We had then 6 or 8 days of good dry weather, and finding that what I had put on the wall first had cured considerably, I piled the bundles 3 or 4 deep and afterwards filled the vacant spaces with later cuttings. Some of the corn was grown upon land from which a crop of hay was taken last year, and it was quite green when cut. This I did not pile so thick, but found that the rain water dried off so quick that the under sides of the bundles did not change their color and cured without being damaged. I was surprised that so little water penetrated the bunches, and noticed that in most cases where the water remained for any length of time, that it was where the bundles were laid partly crosswise of each other, which prevented the water from running off.

The fodder was put into the barn at different times between Oct. 25 and Nov. 8, having been on the wall from 8 to 10 weeks. So much rain as we had last fall made the top side of the fodder look bad, and some persons who saw it from a distance thought it spoiled, but a slight examination satisfied them and [illegible] that the injury was trifling.

The quality of the [illegible] was not of course what it would have been if it had not been hurt somewhat by laying on the ground before being cut, and had the weather been more favorable afterwards. But my cattle ate it readily, and those who saw it—Harris Lewis of New York among the number,—stated that it was the best cured of any they ever saw.—*Cor. Boston Cultivator.*

To Improve the Quality of Hay.

It is a noticeable fact that the hay crop as generally stored is far behind what it should be in point of quality. If soil is so ill adapted to grass that a heavy yield cannot be obtained, there is no excuse for having an inferior grade. An exchange, and we regret to be unable to say what one, gives the following on the subject:

If his land is not naturally fitted for grass, there are yet two ways in either of which the farmer may succeed in obtaining good results. The first and, as far as present results are concerned, the easiest way is for him to obtain the seed of some of the varieties of grass which, while making first rate hay, are also adapted to his land. For instance his land may be wet and cold, filled with bog or sedge grass of miserable quality.

Now if the owner will turn over the turf and let it rot (meanwhile obtaining a crop of corn, oats, or some other grain), and then seed down with Alsike clover, red top or even fowl meadow grass, he will not only greatly improve the quality of his hay but also increase the quantity. Even timothy can be sown on wet land and for a few years produce good crops. The tendency is, of course, for the old wild grass to supplant the improved kinds, although the clover, being natural for wet lands, is said to hold its own a great while even in cold and poor land. If this course is pursued it is probable that the process will have to be repeated every four or five years in order to maintain a first rate quality of hay.

This system, as we said above, is the easiest and, as far as present results are concerned, without any regard to future comfort or profit, the most profitable method to be pursued. But if the farmer looks to the future, as all men ought, and endeavors to provide not only for the present but also to prepare for the future, he naturally desires some method of improvement which shall be successful in its present results, and also be of permanent value to himself and to his farm. This method is found in a system of thorough drainage and high manuring. It is objected that these things are too expensive? Remember that everything of value is expensive. It costs to improve it, but the improvement is a perpetual benefit. Every year it pays something toward the expense. Suppose a case:

A farmer has a meadow containing ten acres of good land with the exception of being cold and wet. Because it is wet it is cold, and because it is wet and cold both, it will produce only a very inferior quality of hay. It is not suitable for other crops. All that he does with the land is to mow it once a year. He obtains about a ton of hay per acre, and when well cured it is worth about ten dollars. The land he calls worth about fifty dollars per acre. Now let him dig large ditches to take off the surplus water, let him expend in this way two hundred dollars on the lot.

The dirt thrown out of the ditches will be worth at least fifty dollars—probably more—to put into the barnyard for compost. This will leave one hundred and fifty dollars as the cost of the improvement of the ten acres. The land will now be in condition to bear grass or any hoed crop, and will be worth one hundred dollars per acre. It will produce from one to two tons of hay per acre, and the labor of obtaining the crop will be much less than it was before the land was drained. Now apply manure, and large and valuable crops will be obtained. The increased value of the crop will in two or three years pay for all the work, while the land will be worth double the price it would sell for before it was improved.—*Ohio Farmer.*

Improving Meadows.

Just after haying is finished every farmer knows exactly where he cut the heaviest grass, and just where the unproductive acres are, and then is the proper time to improve them. It is too generally believed that when a meadow has become sod bound and unproductive, a course of ploughing and cropping by rotation and seeding down is necessary, in order to obtain a heavy growth of grass.

This method is good, providing two difficulties are overcome: first, when only a portion of a field requires renewing, it is difficult to remove a crop of corn (which is almost invariably raised first) from the ground in time to secure the fall seed on the balance of the field before the frost has injured it, as the meadow becomes too wet and soft to allow cattle and horses to tramp upon it.

Second, when sod is once turned, farmers are apt to keep it under the plough too long; hence so many acres of poor land upon the farms of Ohio husbandmen. Land should always be stocked down before the old sod has entirely rotted away. The two above named difficulties have kept hundreds of acres of meadow land lying in almost useless condition for years.

Experience has taught many, however, that to renovate meadow land ploughing is not required. The partly barren places should be marked out, and in the month of September receive a good top dressing of manure and be thoroughly harrowed up, dragged until the old sod is entirely broken up and torn in pieces, then stocked with one peck of pure timothy seed per acre, and drag lightly.

The trouble is, the grass roots becoming so compacted and interwoven that they cannot ramify, and foreign matter works in. A coat of manure, thorough harrowing and seeding will cause sufficient increase of grass the first year to more than pay for labors bestowed. If in the fall it is discovered that by reason of drouth or any other cause the seed has not grown, it should be restocked without dragging in the latter part of March. We have had the best luck when stocking in spring by sowing upon a light snow.

There is another thing that too many farmers neglect and that is the putting of meadows in proper shape for the mowing machine. The time spent mowing around stumps, hillocks, logs and trees, with a hand scythe, amounts to more in a season or two than would be required to remove them all, and make the meadow forever afterwards clear and smooth.

We have noticed that farmers who apply all of their barn manure to their meadows in the fall produce the heaviest crops of all kinds upon their farms. The reason is this: manure lying in the pile until all becomes decomposed and more valuable, and it being all applied to meadows, there is none for ploughed ground. So but two or three crops will be taken off, then sown to clover and the second crop ploughed under, then stocked down, and a new piece ploughed. It makes easy tillage and large profits.—*Ohio Farmer.*

Top-Dressing Grass Land.

If any one has any manure to spare at this season of the year, he need not fear to apply it just now, and that, too, pretty liberally. Many indeed think that now, just as the grass is rapidly growing, is the very best time of all the year. It does not remain long exposed if applied now. The grass grows up around it and gives it shade and keeps it moist in fact forms a complete protection against loss by evaporation that may be caused by the sun and the wind. As a general rule we prefer to top dress in the fall, as it gives a good winter protection and prepares the ground admirably for work in the spring, but if there is any lot that needs a dressing, the next best time is just as the grass is starting into active growth.—*Massachusetts Ploughman.*

Implements of Husbandry.

A Turnip Thinner.

It has long been proved that the most profitable method of sowing turnip seed is in continuous rows on ridges a certain fixed and regular distance apart, and that the best time to thin them is when the little plant rises about three inches above ground. All are then removed except small tufts of two or three inches in width and from twelve to fifteen inches apart. This thinning process, we need scarcely say, is both a slow and tiresome occupation when done by the hoe, and it is a constantly increasing cry of complaint with farmers that they can never get it done properly at the right time. In the first place they must not attempt it until the plant has attained sufficient vigor to withstand the ravages of the fly, and secondly, if left too long, there is a large waste of nutritious matter in the support of those which have to be cut away. A good turnip thinner, then, is an implement which, we presume, the great majority of farmers would hail with delight. There is one at present in use which is fairly spoken of by those who have used it. It consists of a number of hoes, placed in frames at distances apart corresponding to the spaces desired between the plants—twelve, fifteen, or eighteen inches, as the case may be. The frames are supported on curved slides which travel on the ground across the ridges, transversely to the lines or rows of plants; they are connected together so that three or more hoes are worked at the same time, and the curved slides are so constructed that as they pass across the ridges they communicate a wavelike motion to the hoes, causing them to dip into the tops of the ridges and remove the plants that lie in their respective tracks. Very simple means are provided for adjusting the slides to ridges and furrows of different widths, and also of adapting the hoes to different sizes and spaces of tufts. The larger machines have light wheels for turning at the headlands, but the smaller machines being so light, these are not required. It may be added that no practical difficulty is found in getting the horse to walk across the furrows; and he does so without injuring the crop in any way At the usual ploughing pace the smaller machines will space from 3 to 6 acres per day and the five-hoe machines from 8 to 12 acres; of course, the wider the spaces the more rapidly the work will be done.

Farm Pumps.

There is nothing more vexatious or annoying than a bad pump, whatever its situation, or however used, and there are so many different opinions as to what constitutes a good pump, that a few remarks on the subject may be acceptable. A good pump should work easily, and draw water in sufficient quantity (that is, of course, providing there is plenty of water to be drawn) to fill a common wooden pail with two, or not more than four strokes. Iron pumps are decidedly superior to wooden ones, both in respect of work to be accomplished and the duration of the article itself. The fact that the difference in price between the two kinds is now becoming smaller and smaller, renders their acquisition all the more easy. One of the greatest difficulties connected with the pump is its liability to freeze in winter. Now a sure way of preventing that is to purchase one whose movable or upper valve works some inches, or even a foot or two below the level of the ground, and then of course you must have your platform tight, so that the well and all parts below are guarded against the cold from without. An excellent deep-well pump was contrived some years ago by a company at Seneca Falls, N.Y. The working part is placed at the very bottom of the well; the lower part of the cylinder is furnished with a strainer, and is plugged at the bottom to prevent the ingress of sand and mud. The connecting rod between the cylinder at the bottom and the standard at the top is wrought or galvanized iron, and all the pump needs is firm bracing to prevent its swaying whilst working.

The *Chain Pump* is one of the least liable to freeze, being composed essentially of a series of discs attached to chains which, revolving over a pulley, empty themselves as they "go over;" and when the motion has been discontinued, the water settles down again into the well.

The *Drive Pump* is an invention which might be worth trying in sandy ground, or in fact any kind of ground that is free from large rocks or boulders. It consists, first, of a small tube of iron, closed and pointed at one end, about twelve or fourteen inches in length, and riddled along its sides with small holes or pores. The upper or open end of this tube has also a screw-thread around it. Having selected your place for the well, this tube is driven into the ground with a maul until only a couple of inches or so remain above ground; a similar piece, but open all through, is next screwed on to it and the maul is again applied. Piece after piece is thus added, until you think the last must be in the water region. As soon as it passes into a stratum of wet sand or gravel, the water oozes into it through the pores, and a pump applied at the top will readily draw it out. The pump, it must be remembered, is constructed to fit on any of the pipes just as they are made to fit one another, and it must be frequently adjusted and tried, for it is indeed by its means, and that alone, that the existence of water in the tube can be determined. As soon as water is found to come away, keep on pumping, and the effect will be that in a short time your well will be formed. The water is first drawn in through the pores, as we have said, then the sand which has been loosened around the pores, little by little, until at last quite a large opening is effected, capable of holding three or four pails, and the longer the pump is used the larger will the well become These pumps have been largely used in several parts of the United States with much satisfaction.

Machine Combinations.

The combination of several functions in the same machine is one that has much to do with manufacturing machinery, and constitutes what we may term a principle in construction.

The reasons that favor the combination of several functions in one machine, and the effects that such combination may have on the product of machines, are so various that it has led to a great diversity of opinions and practice among both those who construct and those who employ machines. It may be said too, that a great share of the combinations we see in machines, such as those to turn, mill, and bore, slot and drill in iron fitting, are due not to any deliberate plan on the part of the maker so much as to an opinion that such machines are novel, and represent a double or increased capacity. So far has this combination in machines been carried, that in one case that came under the writer's notice, a machine was arranged to perform nearly every manipulation required in finishing the parts of machinery; completely organized, and displaying a high order of mechanical ability in design and arrangement, but practically of no more value than a single machine tool, because but one operation at a time could be performed. To direct attention to certain rules that will guide opinions and practice in this matter of machine combination, the following propositions should be considered:—

1. By combining two or more operations in one machine the objects gained are economy in framing, the same supports answering double purpose, and a saving of floor room.

2 In a machine where two or more operations are combined the capacity of such a machine is only as a single one of these operations, unless they can be carried on at the same time without interfering one with the other.

3 Combination machines can only be used with success when one attendant performs all the operations, and when the change from one operation to another requires but little adjustment and rearrangement in each case.

4. The arrangement of the parts in a combination machine have to be modified by the relations between them, instead of being adapted directly to the nature of the work to be performed.

5. The cost of special adaptation and the usual inconveniences of fitting combination machines when their parts operate independently, generally equals what is saved in framing and floor space.—*Journal of Franklin Institute.*

Swivel Ploughs.

The advantages of the swivel plough are not so well appreciated as they should be. A few years ago, desiring to test their value upon level ground, we did the whole of our spring and fall ploughing with them. We used one of them which was designed only for hill-side ploughing, and by no means so well calculated for level work as some of the newer and improved ploughs, both for sod and stubble, and found it a great saving of time and labor. By returning upon the same furrow we went up there was no waste in going around the headlands, and the harrow could follow close up to the plough. Thus, in corn planting in the spring or in sowing wheat or other crops, every foot of ploughed ground at the close of the week could be finished and sown or planted, and on Saturday the week's work evenly and neatly done up. Besides, the seed could always be put into the ground while the soil was mellow and moist, an advantage in some seasons of great importance. One of these ploughs has recently been greatly improved and furnished with a coulter for ploughing sod. The character of the mould board is such as to insure easy draft, and as in using the plough each horse alternately walks in the furrow, the labor of the team is greatly lightened. The efforts of plough makers have been industriously turned of late to the improvement of these ploughs with great success, and it needs only that the attention of farmers should be drawn to them to profitably extend their use —*Am Agriculturist.*

Useless Machinery.

Many thousands of dollars are expended annually in the purchase of useless machinery, palmed off on the unsuspecting farmer by the oily-tongued and unprincipled so-called agents, pedlars and patent rights men. It is asserted by some that the agents of machinery and agricultural implements are a great blessing to the persons that use such articles, on the principle that they are ignorant of the use and benefits of the improved machinery which is being introduced from time to time. But such a theory is absurd. I think the farmers intelligent and thoroughgoing enough to seek the manufactories and canvass the merits of the different machines offered, and supply themselves with such labor-saving implements as they consider economical. Under the present system an agent comes along with a very oily tongue, a pretty good knowledge of human nature, and an aptness to discern the weak side of the farmer, and is determined to sell a machine if he has to spend days for it (and he can well afford to spend much time by the profits he gets). He exhibits his machine, or engravings, or samples of it, descants upon its superior merits, displays a string of certificates of leading men in its favor, and usually leaves with your order for a machine. In many cases the purchaser is cheated, and he curses the agent, pays for the machine, and throws the useless article aside. Just glance around you, and at nearly every house you will find a churn, washing-machine, a corn cultivator, and many other machines of like character, which are never used because of their worthlessness. Let us, in all cases, try a new invention before we invest, and if we find it well adapted to our purpose, inform our brother farmers of its merits, through our favorite papers, and we may discuss their merits with profit in the club. The manufacturers may advertise their wares through the same papers and send samples of their machines to the different clubs for their inspection, and thereby keep up a direct communication between the producer and consumer, with profit to both.—*Cor. Iowa Homestead.*

POTATO DIGGER WANTED.—The Agricultural Association of Veendam (Netherlands) offers a prize of 1,000 guilders (say $400) for the best machine for digging potatoes, and 300 guilders for the second best. If no machine according to the requirement is sent in, a compensation of 100 guilders will be offered to the best of the machines presented for competition, and another of 50 guilders to the next one. The match is to be held at Veendam in the beginning of October next.

Horticulture.

EDITOR—D. W. BEADLE, Corresponding Member of the Royal Horticultural Society, England.

THE ORCHARD.

After Transplanting.

If the labor of filling our ground with trees, shrubs, vines and plants, ceased with transplanting, it would not seem so formidable. The fact is, it has then but just begun. Such is the character of our summer climate; the burning sun, the strong, drying winds and the absence, for weeks together, of rain, render our climate so trying to vegetable life, that it is safe to conclude that if newly set trees and plants were left to struggle for existence unaided, a large proportion would succumb to the unfavorable influences of the climate.

There are some general principles of culture applicable to all classes of plants, and others applicable to specific classes.

1. It may be given as a general rule, that all plants, either at the time of transplanting or soon afterwards, should have their evaporating surfaces diminished to correspond to the reduced absorbing surfaces of their roots. It is seldom that we can take a tree or plant and, transplanting it, leave the portion in the atmosphere unpruned without retarding its subsequent growth. Even the strawberry will thrive much better after transplanting if a portion of the leaves be taken off, while the raspberry and the blackberry—those biennial canes—should be cut down to the ground. The grape, currant, and gooseberry—perennial vines and wooded shrubs, should be cut down to within two or three buds of the ground. Most of the perennial vines, plants, and shrubs of the lawn and flower garden are improved by pretty severe pruning, and those aspiring to the dignity of trees should have their lateral branches at least cut back pretty thoroughly.

2. Our efforts to preserve the lives, and promote the rapid growths of transplanted trees and plants do not cease with pruning. We consider it not only important to prevent the too rapid evaporation of moisture from the surfaces exposed to the atmosphere, but also to preserve an abundance of moisture in the soil near the roots. To effect this end, we have two methods, namely, to capacitate the soil for absorbing and retaining moisture from the atmosphere, by frequently stirring it with implements, or to prevent the moisture from drying out of the soil by a shading of mulch. Mulch, undoubtedly, not only prevents the moisture under it from evaporating, but by keeping the soil cooler, causes it to condense moisture from the air with which it comes in contact.

Under some circumstances, one method of retaining moisture is the most feasible, under others, the other. With strawberries, raspberries, blackberries, and all kinds of plants, shrubs, vines, and trees grown in a ploughed field or garden, we should prefer cultivating to retain moisture, but in setting out trees by the highway, or in a lawn, or wherever the entire ground is not to be under cultivation, we should rather give preference to mulching.

In cultivating young plants the first time after transplanting, great care should be exercised to avoid tearing them up. If they were properly planted, there is but little danger in this direction, as the roots were covered deep enough to admit of stirring the ground over them without endangering their safety, but if set by careless employes, more or less of the roots may be so near the surface that the hoe may catch into, and jerk them out. We have known strawberries, and even raspberries, torn out in this way. It is very aggravating, after having been to the trouble and expense of fitting the ground, procuring the plants and setting them, to have them torn out, and all that they have gained lost, through the carelessness of one whom you pay to be careful.

Another thing to be observed in strawberries—they will blossom this spring, and make a feeble attempt to bear a few berries, and while the satisfaction afforded you by the fruit would be small, the injury to the growth and future productiveness of the plants will be great. We practise going over the vines, and pinching off the blossoms as fast as they make their appearance, and we are confident that the practice is sustained. In all perennials, let the strength of the soil and the energies of the plant be directed the first year to laying the foundation for future productiveness.—*American Rural Home.*

On the Cracking of Fruit.

M. Boussingault has recently communicated to the Academy of Sciences, at Paris, some observations on the cracking of fruits, which are of some interest to the horticulturist. The phenomenon is unfortunately too well known. The cracking is undoubtedly attributable to an accumulation of water in the tissues, the epiderm not being sufficiently elastic to yield to the pressure, thus causing cracks. It cannot, says Boussingault, be due to an arrest of evaporation alone, because absorption by the roots is checked in wet weather. It cannot, therefore, be admitted that the water which accumulates in the fruit, and causes it to crack, is derived from the sap, but there is reason to think it occurs from the absorption of water through the skin of the fruit by endosmose.

In order to test this latter point, M. Boussingault experimented with various fruits by weighing them and then immersing them in pure water for some hours, till cracking resulted. When removed from the water afterwards they were found to have gained in weight. That proved the absorption of water. That this absorption was due to endosmose was shown by the circumstance that the water in which the fruits were immersed contained sugar. Boussingault accordingly concludes that the cracking of fruits which occurs after or during continuous heavy rain is the consequence of an increase of volume occasioned by the introduction of water; and, moreover, that by endosmose the fruits yield to the water a portion of their saccharine matter. Leaves similarly treated yielded sugar to the water in which they were immersed, although the skin of the leaf did not crack. In the case of roots, however although they contained sugar, and although they of course absorbed water, no sugar was exuded into the water in which they were immersed.

"X" writes the *Gardeners' Monthly*: "Pears do not crack when the soil is sufficiently supplied with lime and potash; and they crack most where those salts are deficient. Common wood ashes contain those salts, nearly in the quantity and proportion that pear trees on such soil require—40 per cent. of potash and 30 per cent. of lime. Reasoning from these facts, I applied wood ashes at the rate of 40 bushels to the acre, after the fruit had formed and cracked. Many of them healed up and made perfect fruit the same season, others not until the next season. A friend, at my suggestion, applied it heavily to a favorite butter pear tree in his own garden for several years in succession, and has had ever since perfect and delicious pears; and I will go as far as to guarantee it to cure any case, where the ashes are finely and abundantly applied. I was told by an experienced hand that I would kill the trees, but on the contrary, I cured them. Therefore, do not be afraid, if one application will not suffice, give them a larger dose next year. A moist atmosphere undoubtedly encourages the growth of the tree and fruit, while the insufficiency of proper food prevents the perfection of either; hence, cracked fruit and "rough oh bark."—*Gardeners' Chronicle.*

Treatment of Orchard Soils.

We condense the following from the report of a discussion which occurred at the session of the Western New York Horticultural Society at Rochester in January last:

Mr. John J. Thomas, of Union Springs, was of opinion that the soil should be kept mellow in young orchards. The depth of cultivation might be one or seven inches, indifferently. One caution only should be used, and that was not to cultivate to any depth while the trees were growing. He had seen a farm acre orchard lot in New England ploughed so deep that four cart-loads of roots had been drawn away afterwards. This was done early in the spring, and apparently without detriment. In older orchard cultivation was of less importance, provided the ground was heavily manured. It was therefore impossible to lay down an unbending rule. Men should act according to circumstances and according to the condition of the trees. If growing too slowly, the orchard must be manured and cultivated. If very thrifty, it might be seeded down for a few years. To say what should be done with an orchard without seeing it was the same as prescribing for a patient without visiting him. Dr. E. W. Sylvester of Lyons, was an advocate of grass in orchards. Had an apple orchard that has been in grass eighteen years, and continued thrifty, bearing good crops. Had a dwarf pear orchard that had been sixteen years in grass, and yielded fruit that amounted to $500 to $1,000 per acre annually. Manures his trees every fall with lime, ashes and muck.

H. E. Hooker, of Rochester, had been interested in the grass theory. Had noticed the trees about the door-yard, hen-yard, calf-yard, and other out-of-the-way places where the plough had never been, produced the best fruit. They had been manured by the animals, and the ground near the surface was full of roots. You cannot keep up the fertility by ploughing without manure. Has known trees checked by ploughing. He thought the great end gained by manuring and not ploughing was that the roots grew nearer the surface, where the best conditions of growth exist. Nature manures upon the surface. You cannot waste manure by spreading it upon the surface. Has found that trees set deep did not grow as well as those planted more shallow.

The president, Patrick Barry, of Rochester, said that his experience was all in favor of cultivation. You could not grow the finest fruit, such as was now demanded, without it. Does not care whether you make mellow by manure or ploughing. Men could easily allow their trees to stand in grass, in fact, that was the natural temptation. They could turn them out to grass, and as soon as they do that, might grub them up at once. He had found that cultivation alone was at least as much to be recommended as grassing, even with the most unlimited amount of earthing.—*Vermont Farmer.*

About Pears.

The Washington Pear—"An old gardener" writes to the *Horticulturist*.—I don't see what is the matter with our pomologists now-a-days, for it strikes me they are turning their backs on many of the good old-fashioned fruits that some of us can recollect with such vivid suggestions of excellence. Now, the old trees planted by my ancestors still stand, and among them not one, no, not even the Seckel, can exceed this delicious pear—the Washington. True, there are seasons when it does not produce largely, but then it is generally at its best, and when it is loaded heavily the fruit does not ripen properly. A proper thinning of the crop obviates this difficulty, however, and I would then like to see the pear that will sell better in the markets or in the confectioners' window. It delights in a rather heavy soil, with a good coat of manure occasionally, and then the reward is sure.

Rutter Pear for Canning.—Specimens of this pear have been canned the past fall by Richardson and Robbins of Dover, Del., which were obtained from the trees of Mr. Satterthwaite. We judge, from the tests and specimens placed at our disposal, that the pear is a success for this purpose. It cooks all through firmly, does not soften, is white, sweet flavor, and large size. It is not as handsome in appearance as the Bartlett when canned, but is more sweet. Neither of them, however, can compare with canned Lawrence. The test we consider a satisfactory one, and fruit growers may plant the Rutter freely, knowing that it is desirable both for market and canning. The more we can have of such sorts, the greater the value of each variety.

Pears not Good for Canning.—The same parties who have experimented considerably in canning, say that the Belle Lucrative, Howell, Beurre Clairgeau, and Onondaga, are entirely unsuitable. Thus far only the Bartlett, Lawrence, Duchess, Vicar, Louise D'Anjou and Rutter are esteemed best. The test for a pear for canning is, that it shall not be too soft, either on surface or at core, but must be firm enough to cook all through. Pears with good flavor are of no value if their flesh is too soft, yet pears of good, firm grain, *without any flavor*, are also equally undesirable.

Large Orchard.—Mr. S. G. Briggs, of Yuba City, Cal., has the largest orchard probably in that state, if not in the United States. He has a solid block of fruit trees covering 210 acres. The soil is a light, sandy loam, and is always cultivated with ploughs through the whole season. A correspondent of the *Marysville Appeal* writes that there are 8,000 peach trees of 16 varieties (4,000 being of one variety, the Red May), 3,000 apricot trees, of 12 varieties; 4,000 cherry trees, of 12 varieties; 7,000 plum trees, of 15 sorts; 2,000 apple trees, of only 8 varieties, 1,000 pear trees, mostly Bartletts, 1,500 "cherry plum" (*P. myrobolana*) trees, and 150 June (*prunus besseyi*) plum trees. There are also 1,500 walnut trees, (*Juglans regia*), of three sorts. The cost of the land was about $17,000; total cost for orchards and all, is less than $30,000, and the estimated value is $50,000.

FRUIT GARDEN.

Hybrid Grapes.

Hundreds of vines are doubtless grown which are supposed to be hybrids, but which are only simple seedlings. To be certain of success in this pursuit, great care and very delicate manipulation are necessary. The bud must be opened prematurely, and all the anthers removed from the grape blossoms before the pollen-cells have burst. The incipient cluster thus prepared should be enveloped in an oil-silk covering to prevent the embryo grape from being impregnated, either by the agency of insects or by pollen floating in the air. Pollen, from whatever variety it is desired to impregnate the parent grape, should then be carefully applied to the prepared bunch, and the silken envelope retained until the growing berries indicate that the process is complete. Seeds saved from these grapes will produce plants, some of which will resemble the foreign and some the native parent. Those only whose habit of growth and foliage resemble the native parent should be saved, as my experience has shown that the more nearly these seedlings follow the foreign kinds in foliage the more they are subject to mildew and rot; and are consequently of little value for general use. Many of the hybrid seedlings will be found with thick, strong foliage, in texture and character like our natives, and it is among these we must look for grapes of the greatest value—hardy, healthy, and bearing fruit of improved quality.

In this connexion I wish to make public a discovery which I believe to be entirely new, and which I think will be of great value to all experimenters in growing hybrid and seedling grapes. It is a method by which the future character of the fruit of a grape seedling can be determined in the first year of its growth—years before it can be brought into bearing. To illustrate this: I had three vines selected from a lot of seedlings crossed with Grizzly Frontignac. Three years before they came into bearing I announced that No. 1 would bear a black grape, having the Frontignac or Muscat flavor; that No. 2 would bear a red or white grape without the Muscat flavor; and that No. 3 would also bear a red or white grape, with the Muscat flavor. This prognostication was the more remarkable because I had never, up to that time, raised a grape-seedling having this peculiar flavor, found only among foreign varieties and their hybrids. When these grapes came into bearing my predictions were found entirely correct. Nos. 1 and 3 had the Muscat flavor; No. 2 was flavored like the Delaware, with no trace of the Muscat; No 1 was black; Nos. 2 and 3 red. A year or two later, of seven seedlings, crossed with Chasselas Musque, I selected two as promising to have the Muscat flavor, and five without. Six of the seven have now borne, and the two selected have the flavor of the Muscat as distinctly as the Muscat Hamburgh and Chasselas Musque, which they severally resemble, while the other four are as free from it as Chasselas Fontainebleau. One more incident will probably give as full an idea as may be necessary of the extent and capabilities of this discovery. A chance seedling, selected by my gardener for its fine habit of growth, handsome wood, and healthy foliage, had all the appearance, especially in its prominent buds and elegantly lobed leaves, of a most promising hybrid. The wood, the form of the buds and foliage, very strongly resemble the foreign varieties. The application of my test, however, indicated that the fruit would be of the character of our wild forest grapes. I need hardly say I waited its bearing with some anxiety, for every appearance of the vine was averse to my prediction. But, as in every other case, the correctness of my discovery was triumphantly established. It bore a very small black grape, nearly all skin and seeds, and of a sour and acrid character, wholly uneatable.

Repeated and unvarying tests of a similar character have so far convinced me of its entire correctness that I do not hesitate to announce that in the taste or flavor of the green tendrils of the vine may be found a true index of the character of its fruit. Although this is something that cannot be exactly defined or accurately described, it may be acquired by any one with a nice, discriminating taste. Go into a greenhouse where foreign grapes are growing, and taste the tendrils of the Muscat-flavored varieties, and of the Black Hamburgh and Chasselas, and you will soon learn to distinguish the difference, which is as distinct as the flavor of the grapes themselves. You will find in each distinctive differences suggestive of the character of the grapes.—*Farmer.*

COAL ASHES ABOUT PLUM TREES.—I had a very pretty plum tree in my yard a year ago last summer. It had but a few plums on it. It looked healthy, but the fruit fell off until seven very imperfect plums remained. That fall I dug around the tree, cut away the grass, and spread coal ashes, from the stoves, around it for two or three feet, and two or three inches deep, and tramped the ashes lightly down. The following spring the tree leaved out nicely, was full of plums and nearly all remained on until ripe—so full were the branches that I had to tie them up to support the weight. The fruit was quite perfect in size and shape. I am sure the manner of treatment was the cause of the improvement. I think fruit trees could be thus improved—both in quality and quantity of fruit they would produce.—*Ex.*

LIQUID MANURE FOR STRAWBERRIES.—An English gardener has been very successful with his strawberry crop for several years on the same bed, and attributes the abundance and size of his fruit to the use of liquid manure, composed of one pound each of Epsom salts, Glauber's salt, pearlash and carbonate of soda, and one-half pound of muriate of ammonia to sixty gallons of water. He applies this manure as soon as the plants show signs of growth in spring, watering them pretty freely without a hose, three times, at intervals of about a week, so as to finish before they come into flower; and, if the season be dry, he finds it absolutely necessary to supply them liberally with common water afterward during the whole time of growth, or their increased activity, he thinks, would quickly kill them.

THE VEGETABLE GARDEN.

Much as may be said in praise of velvet lawns, ornamental trees and flower-borders, not less important is the humble and useful garden of vegetables. Yet one cannot fail to see that everywhere it is much neglected. The farmer neglects it because he is burdened with the care of his broad acres; the man of business neglects it because his store or office or shop engrosses his time; and others neglect it supposing that it requires only the most careless cultivation. All such persons deprive themselves of a great source of pleasure. For men of sedentary pursuits especially, the care of such a garden would prove the best medicine-chest, and be vastly cheaper than a sea voyage. To command the greatest success in a kitchen-garden, however, a few things are to be considered

1. As to position and shelter. To ensure the quick growth and early maturity of vegetables, it is desirable that the land should be open to the sun all day, and, if possible, that its surface should incline a little to the south. It should be protected on the north and west sides by a high and tight fence. A tall hedge or a line of evergreen trees answers a good purpose as windbreak, though if planted too near the garden their roots will be quite sure to steal much of the food designed for the vegetables.

2. Preparation of the ground. First of all the land should be made porous, and free from stagnant moisture. A cold, sour bottom soil is fatal to healthy vegetation. Unless the subsoil is gravelly, substantial drains of stone or pipe should be laid through it, three feet deep and about thirty feet apart. Draining should be followed by trenching or subsoil ploughing. The under soil should not be brought to the top, but simply be broken up and pulverized, so as to allow all surplus water to pass off, and to furnish ample room for the root growth of vegetables, and to prevent their suffering from the effect of drought in midsummer. In some cases even this treatment will not suffice. The soil may be so stiff and tenacious as to require the addition of sand or coal ashes to make it loose and kindly to work. Such management, with a yearly dressing of manure, will soon bring the most obstinate soil into good condition.

3. And this suggests the item of manuring. Whatever may be true in field-crops, it is a fact beyond all question that garden products cannot get on without an abundant supply of manure. Small, tough, fibrous, insipid vegetables may be grown without it, but none other. Give the ground an annual dressing of it, well pulverized and worked in, and it will yield large, tender, juicy esculent roots and small fruits, such as are a luxury to look at and to eat, and such as will command the highest price in market. If one's supply of barnyard manure is small, let him save all the refuse of kitchen, hennery, and woodhouse, and compost these together with leaves in the fall, and he will be surprised at the amount of his yearly accumulations.

4. A garden should be laid out in plots; and each plot should have a special crop, or a succession of crops, assigned to it. Every good farmer makes a map of his land, on which the crops assigned to the different portions are set down, so that he can see the whole at a glance. So should the gardener have a map of his little farm. And as the successful farmer practises a rotation of crops from year to year, so should the gardener. Such plants as rhubarb, asparagus, cucumber, melon, and tomato should have the warmest corner of the garden. Currants, raspberries, gooseberries, and grapes should be set near the fences, where they will not shade the low-growing vegetables. If the garden is laid off into large squares, much of the tillage in spring can be done by horse-plough.

5. The garden having been plotted on paper, next comes a timely provision of reliable seeds of the best varieties. It is seldom safe to postpone this until planting time. The seeds which you may hastily pick up at the nearest country store may chance to prove fresh and well selected; but there is no certainty about it. The only safe way is by inquiring, to find out some honest and intelligent seedsman—whether he be nigh at hand or a thousand miles away—and then order a full supply from him. It will be economy in the end, and save much anxiety and final disappointment.

Moreover, one wants not only good seeds, but the best varieties of each vegetable. For example, some of the newer peas, tomatoes, cucumbers, cauliflowers, sweet corn, etc., are an improvement (in earliness and other qualities) on the other sorts. Ascertain what are the very best of these, and send for them and none other. It costs no more time or labor to raise first-class varieties than second-class, and surely it is pleasanter and more rewarding.—*Christian Union.*

Setting Out Tender Plants.

We shall soon arrive at the time when setting out tomatoes, egg-plants, and other vegetables forwarded artificially, will be in order; and a word of caution against setting them out too early will save many from disappointment. There is nothing gained by being first in the field in cases of this kind. The plants become stunted, and do not grow as fast as others put out later, but not until the ground is warm. These go right on without stopping, and generally come into us before those which it was thought would beat them.

It is rather remarkable that this fact is not more generally recognized than it is, as most farmers know that it is true of corn. That which is put in very early often gets yellow, and in other ways shows evidence of sickliness, and no one, unless in very high, dry, warm ground, ever thinks to put in the corn crop till all danger of a chilly spell is over.

Yet in tomatoes and egg-plants the error is frequently made, and often by people who ought to know better. Even "new varieties," warranted to be "ten days" or some number of days earlier than some others already known, have been honestly sent out, because the introducers were ignorant of this simple thing.

Some old-fashioned kind was set out in the usual thoughtless, careless way, and the "choice variety for experiment" reserved, and after some days set alongside the others, and then the account would confidently and yet truly tell us that though put out a week later, it ripened some days before the other well-known kinds.

What we have said may serve the double purpose of preventing a too early planting of these things, and a too ready investment in extra early kinds.—*Germantown Telegraph.*

WHAT a foe the farmers have to contend against in the potato bug is shown by the experience of a man in Joliet, Ill. He placed some in a bottle eight months ago. They have been exposed to the extremes of winter and summer, have had nothing to eat, and are still living.

A PERPETUAL HOT BED.—At Niederplanitz, near Swickan, in Saxony, a vast bed of coal has been burning for over three hundred years. The ground above this subterranean bed of fire has become thoroughly warmed by this time, and an ingenious gardener has utilized it by planting upon it a large nursery garden. Here he raises tropical plants of all kinds, with exotic fruits; which flourish with a vigor and luxuriance in the open air that the best forcing houses could not insure. His specialty is pine-apples, of which he has a great variety. There are subterranean fires in other parts of the world which have been utilized in a similar way. Would it not pay, in certain cases, to take a hint from these accidental examples of underground heating, and warm large plots of soil by means of steam pipes, running under the surface?—*Rural Carolinian.*

THE FLOWER GARDEN.

The Lilium Auratum.

A friend of the writer, who is an acquaintance of a successful amateur florist, gave an account of his plan for growing the Lilium auratum, or Golden-banded Lily. He thought that any soil, suitable for roses, would do for these lilies He planted his 4 inches deep, letting the base of the bulb rest on the earth, so that the roots might strike directly into it. The sides of the bulb were surrounded with sand. These lilies had as many as nine blossoms on a stem.

Another amateur florist, who cultivates the Lilium auratum and other Japan lilies in a greenhouse, told the writer that he had no trouble in producing fine large plants and flowers. After the plants are done blooming, the pots are plunged in the garden and well covered, where they remain until near Christmas, when they are again taken into the greenhouse. By that time, the bulbs are well-rooted having had regular moisture, and an unforced growth The writer saw one of these lilies when in bud The stem was at least 4 feet high, and the prospect for flowers very fine.

We had a very large bulb of the Lilium auratum brought to us one winter to examine. It had been potted about three months, and had been kept in a greenhouse. It showed no signs of sprouting, and the lady who brought it was quite discouraged at the state of her fine bulb, for which she had paid rather a large price. We found the bulb set on the top of the ground, instead of under, and though the roots were numerous, and had covered the outside of the earth, there was not a leaf to be seen, or any signs of one. The lily was left to our care. We covered the bulb, by heaping earth over it, watered it slightly exposed it to the sun in a south window, and in ten days a fine stem appeared, which in course of time, produced four or five large flowers.

A lady, who every winter has fine white lilies in bloom in her greenhouse, told the writer that she seldom had them repotted; but instead top-dressed them and watered them with manure water. She used very rich earth. They were a large sort of L longiflorum.

In our neighborhood, there is a general complaint that the Japan lilies do not flourish well. They may bloom for a season or two, but soon die out. We think the cause may be the clayey moisture retaining soil, which does not suit the bulbs. We observed, during a visit last summer to Jersey, that the Japan lilies there, almost without an exception, were in a thriving healthy condition. This we attributed to the somewhat sandy soil, which being light and porous, did not retain moisture around the bulbs; at the same time the atmosphere is rather damp, which prevents too much dryness, and retards evaporation from the leaves, which, if the earth were too dry, might exhaust them

A traveller in Japan states that the soil is naturally a sandy one Might we not conclude from this that all Japan lilies need a light and well drained soil? This might be accomplished in the garden, by taking out the soil from the bed intended for lilies, and covering the bottom with stones, brickbats, coal ashes, or shells, to allow superfluous moisture free exit Then the soil might be mixed with a light sand and replaced.—*A. G. in The Garden.*

How to Take Care of Bulbs.

As soon as their beauty of flower is over, we always cut off the flower-stems just below the lowest flower, and for this reason.—the hyacinth and tulip both seed freely, particularly the latter; if the bulb is forming seed, its strength is wasted in a great measure by that process; whereas, if the flower-stem is cut off, the bulb has nothing to do but prepare itself with vigor for blossoming in the ensuing year. We pay great attention to the protection of the leaves of both hyacinths and tulips, and never allow them to be interfered with until nature indicates, by the decay of their points, that the bulb is preparing for rest. We then follow a course with both hyacinths and tulips which we believe many do not; that is, we take them up before the leaves are quite decayed, and for this reason—we believe that both of them, after the bulbs have attained this period of growth, are only weakened by remaining in the ground, because the offsets are living upon the parent bulb, and, consequently, weakening it for the flower of the following year If a cultivator wishes for stock, he should let his bulbs remain until the leaves are quite decayed. If he wants his bulbs to flower in beauty again, he should follow the practice above mentioned.

When taken up, the bulbs should be removed to a shed sheltered from the sun but free to the air, and any earth adhering to the fibres or roots should remain for some little time; after two or three days they should be looked after and the loose earth shaken from them; and, as the leaves decay, they should be occasionally removed. We have generally placed our bulbs at first on the ground, in the tool shed, and, as they got dry, removed them to an airy shelf. When the leaves are nearly decayed, we place them in very shallow baskets, and allow as much air as practicable to be between each root to harden them, turning them every two or three days By this treatment, and rubbing off any portion of mould attached to the bottom and sides, they are in a fit state to be placed for the summer in a dry room and, by a little occasional attention, the rough and outside coat will, by a gentle side-pressure of the thumb, be effectually removed, and exhibits the appearance of the bulb clean, smooth, and in good condition. This latter operation is best performed in the end of August, and at that time remove the remains of such parts of the root of the former year as may not have dropped off previously to this time It is hardly necessary to state that any bulb in an unsound state, either from appearance of decay from having been injured in taking up, should not be put with those intended for future planting.—*The Garden.*

The Cyclamen in England.

As a proof of the perfection to which our British cousins have brought the culture of this lovely spring flower, we copy the following from the letter of a friend who lives far across the sea, as the song has it:

At the meeting of the Manchester Horticultural Society, on the 24th of March, there was exhibited by the Messrs. Veitch & Sons, Chelsea, London, a magnificent table covered by Cyclamens The exhibition was such as to show to what perfection these beautiful spring flowering plants can be brought. Forty-two plants were in the lot, and not one of that number was under the standard of very good. On one of the smallest specimens were fifty open flowers, and on one of the best were a hundred and fifty. The size of the pot was small, about six inches, and the plants appeared to be about two year old

Just think of that, ye who love the Cyclamen! and then wonder why it is that our florists do not do better, and do not take greater pride in possessing fine specimens not only of the Cyclamen, but of all the beautiful inmates of the greenhouse.

Look Out for the Weeds.

The early growth is mainly weeds, and the careful husbandman should watch for and check them. In and among roses, verbenas, geraniums, the Dutch scuffle hoe is the best implement that can be used. It cuts if rightly made, with a double edge, back and forth, and as the operator walks backward it cleans the ground completely about an inch deep of all weeds, and leaves the surface soil loose and pliable, or rather assimilative to the absorption of heat from the mid-day sun and night moisture. In and among the rows of cuttings of gooseberries, currants, grapes, and also among the rows of peas, parsnips, carrots, beets, etc., that form the nursery and vegetable garden, the iron or steel rake, varying in its width to meet the rows of from eight to sixteen inches—is the implement to be drawn back and forth, the operator going backward and leaving the surface ground untrodden and subject to sun and rain.—*Cor. Ohio Farmer.*

The Pyrus Japonica.

About this season is in bloom one of the commonest and best known of our ornamental shrubs—the Pyrus or Cydonia japonica. The crimson scarlet flowers, so like apple blossoms, attract the most indifferent observer, and it is usually one of the first selected in a collection for planting out. Besides the red variety there is another with pale rosy white flowers, which, though not so showy, is much sought after by lovers of variety.

In the looking about for hedge plants this has been thought of, for in addition to its great beauty when in blossom it is a very thorny fellow, and bids defiance to all who attempt to cross it after it is fully grown. But it is just here that it is defective. It is too slow for this purpose if we are to regard it as an element in our general agricultural course.

Those, however, who want an ornamental hedge which is at the same time an impassable barrier against all interlopers, but who are not particular to a few years more or less in the accomplishment of their object, will find this plant one of the most satisfactory. It is especially adapted to form hedges where there is but little width to spare. Most hedges require much width at the base, and to be trimmed up to conical form, or they soon become naked at the bottom, but the Pyrus japonica may be confined to two feet wide at the ground and trimmed straight up like a wall and still be full of foliage from bottom to top.

In planting Pyrus japonica many fail from not setting them deep enough. Usually we have to warn people against deep planting. It is rather a benefit here. If they are set a couple of inches deeper than they grew before removal, they will not only be injured but rather benefited by the additional depth.—*Germ. Telegraph.*

The *Pacific Press*, of San Francisco, gives a picture, taken from a photograph, of a rose-bush in Santa Rosa, which is twenty-five feet high, twenty-two feet across, with four thousand full blown roses and twenty thousand buds upon it. It was planted in 1858, and is of the "Lamarque" variety, one of the most beautiful of white roses. The stem, near the ground, is twenty-four inches in circumference; just above the ground it divides into three principal limbs that grow over twelve feet without lateral branches.

A very handsome variety of the common almond (*Amygdalus communis*) with variegated leaves, has been raised by M. Ausseur-Sertier, nurseryman, of Meusaint (Siene-et-Marne.) In most cases, variegation of the foliage is accompanied with a loss of vigor in the tree or plant in which it occurs, but this variety is said to preserve all the vigor of the type, while it displays a beautiful contrast of colors in its leaves, which are of a fine green, marked with snow-white streaks, and very much resemble the leaves of a variegated Negundo. Plants of it are offered for sale by the raiser.

Flowers as Disinfectants.—Prof. Mantegazza has discovered that ozone is developed by certain odorous flowers. One writer states that the most strong smelling essences, as mint, cloves, lavender, lemon and cherry laurel, develop a very large quantity of ozone when in contact with atmospheric oxygen in light. Flowers destitute of perfume do not develop it, and generally the amount of ozone seems to be in proportion to the strength of the perfume emanated. Prof. Mantegazza recommends that in marshy districts, and in places infested with noxious exhalations, strong smelling flowers should be planted around the house, in order that the ozone emitted from them may exert its oxidizing influence. So pleasant a plan for making a malarious district salubrious only requires to be known to be put in practice.—*Southern Farmer.*

The Robins in the Water-pot.—Messrs. Clare and Brown, of Stockport, communicate the following to the *Gardener's Magazine*:—"One never knows where a robin's nest may turn up, and it is impossible to forget the old French woodman, in whose flowing beard they made a domicile, and brought up a family, of which the old man knew nothing until the young birds began to sing. In our nursery lately a water-pot was hanging empty to a nail in one of the greenhouses, but now it is full, and we must not use it, for it contains a robin's nest and four pretty eggs. The appropriators obtained access to the receptacle chosen for their nest by means of a hole in the roof; and their behaviour is such that, if we were not sure of our proprietorship, we should be inclined to give up the place to them. No one would dare disturb a nest so situated; but it is awkward to lose the use of a water-can at the busiest season of the year."

Testing Seeds.—Now that spring and the planting season are approaching, it is often important to test the vitality of seeds before sowing them. We have heard the following simple and easy method described: Fill a box, pan or flower pot partly with rich, mellow earth, make the upper surface perfectly smooth, and on this surface draw straight lines, and drop a seed at each intersection, so that they may be easily counted. Then take a wide hoop or frame, and make a bottom to it with cloth stretched across, so as to resemble a sieve. Place this upon the seed, and fill it with enough fine mould to form a sufficient covering for the seed, which should generally be four or five times the diameter of the seed for the depth. Keep the soil sufficiently moist and in a warm place. The sieve can be easily lifted and the seeds examined without disturbing them. In this way corn, wheat, clover seed, turnip seed and many other kinds can be easily tested, which may be of considerable importance where the age or freshness of the seed is not certainly known.—*Country Gentleman.*

Poultry Yard.

Poultry Notes—No. 12.

Separating Cockerels from Pullets Marking Broods

The separation of the sexes in chickens should take place at about the age of ten weeks, more especially of the larger breeds, if large sized birds are of importance. The cockerels apart from the pullets will grow faster and better and not be so liable to fight among themselves, a matter of some consideration in itself. The sexes of most breeds can be distinguished at an early age, especially Asiatics, the cock's wings being narrow and pointed, and of a more or less darker color, while the pullet's wings are broader, rounder at the end, and either pencilled or of the self-color of the breed. To a few of the other breeds this remark will not hold good, the cockerel's wings being of anything the larger of the two, but in all breeds the pullet's hedge the quickest, especially on the back and down the breast. The heads of the cocks are usually larger, the combs more prominent, and the carriage more upright than the hen. Taking the points we have mentioned as the rule of guidance, with a little close observation there are few breeders who will not be able to select the cocks from the hens. This will also be found a convenient season for "weeding" the yard, or carefully picking out those which are not good enough to keep, and handing them over to the knife or fatting coop. Many such birds will be found in every yard even with the most careful breeding. To be able to distinguish between chickens that are first class and those that are worthless is of importance, it requires some study on the part of the breeder, but with a little attention in the matter of shape, size, general appearance, colors, markings &c, the needful selection may be made pretty easily. Great saving in the rearing of first class birds will be made by pursuing this course, and many farmers make a mistake in not killing many more of their birds than they do at this particular time, better rear fifty good birds well, than double the number with many unfit for any purpose whatever except indeed it be for the spit. After this is done, and before or just at the time of final separation the parentage of each brood should be carefully noted in a book, so that in after time the pedigree of each fowl may be traced. Of equal importance too is it to be able to tell by some private mark on each fowl, to which brood it belonged, without this, indeed, a pedigree book would be of little or no assistance. In small yards, and where constant attention is given to the chickens, either before or after separation, the memory of a real amateur may be trusted, and every individual chicken will be recognised, but even at best this is not a safe mode of procedure. Chickens grow fast, and, out of a large number of cockerels and pullets, an occasional mistake may be made; even a doubt as to the pedigree is distressing to the mind of a good breeder, therefore a permanent mark is most desirable. A nick is sometimes cut in the bill, or, in the case of the water fowl, a hole is punched through the web between the toes; but this disfigures to some extent the bird, besides involving the danger of disqualification, if noticed in the show pen. A very good plan is to sew a piece of list round the leg; if it is a feathered hen, then sew the list so that it shall hold without being tight enough to destroy the feathers. This will be accomplished if the upper edge of the cloth be put beneath a stout feather, and the lower sown a little more tightly than the top. The material is so soft and pliable that it does not injure a feather. It need not be tight, it will not easily slip over the foot, nor can it pass over the body. The advantage of this system of marking is, that if five or six broods run together, they may always be distinguished by the color of the worsted round their legs without the trouble of catching them to examine for a private mark. But there is danger of this being picked off or in some way lost, and at a critical time you be left in doubt of what brood the chicken belonged to. By far the surest plan, however, is to extend the wing of the chicken, when a triangular web of mere skin will be found between it and the shoulders, which can be pierced in an instant by a stout red hot knitting needle. This method may be thought cruel, but the pain really appears only momentary and the part almost devoid of feeling, for after the instant which it occupies the chick appears to take no notice what ever of the occurrence. The needle should go through and be withdrawn with a single swift "pecking" kind of movement, and by thus piercing one, two or more holes—thus, o o o o o o o o—any desired distinction may be observed, especially as they can be made in either the right or left wing. These marks are permanent; but if desired to be more easily found, a small bit of colored silk may be drawn through one of the holes to mark the place. As soon as the marking is all performed it should be carefully noted in the pedigree book to prevent all future possibility of mistake.

We have already mentioned that crooked breasts should be avoided if possible, especially if the bird are intended for Exhibition, it being a sure disqualification; every means ought therefore to be taken to avoid such a mishap. Chickens of the larger breeds cockerels and pullets, should not be allowed to roost till they are sufficiently well grown, which they ought to be at four months, certainly at six, but if supplied with a little clean straw on a dry floor they will feel quite happy at night, and thus all fear of crooked breasts be avoided. Birds having a good range are not so liable to this misfortune as those kept in a small space, and in small breeds the liability to crooked breasts is very rare. Another misfortune to which cockerels, and in some cases pullets too, are liable is the "slipped" or "turned" wings. Asiatic breeds are much more likely to be affected in this way than others. When noticed the wings should be carefully tucked up every night at roost, and when they are grown large enough to hold a ligature, the wings should be carefully bound up with each feather in its proper position. Not unfrequently too the tail of cockerels receive injury at night, owing to their perches being placed too near the wall of their roosting house; this should be avoided, especially in the case of exhibition fowls, as it greatly mars their beauty, and prevents their chance of taking a prize in many instances. The house should also be kept dry and clean, and a grass run if possible provided for birds kept in confinement, on which, for a few hours each day, they may be allowed to feed. The plumage especially should not be permitted to get soiled or dirty, nor should they be allowed too much sun, as it tends to injure the color. It cannot be too frequently impressed on the mind of the breeder, that at the age of young chickens of which we are now treating too liberal treatment in feeding cannot be over estimated. In chickens it is different from grown fowls; there is no danger of over feeding them. All animals have two periods of life, the first a period of growth, the other when the frame seems to have reached its full state of development. While in the former state no amount of food is sufficient to put up fat to an unnecessary degree, unless when cooped for fatting; in the latter case, food is taken only to repair loss. Hence the plain rule for breeders is to feed young fowls generously. One great point to be observed is to give tone to the system, and nothing so good for this as a grass run. It is even asserted by good authority that a grass run is a greater preventive against crooked breasts than not permitting the young birds to roost. A very valuable ingredient in chicken feeding is that of bone dust mixed with their ordinary food, especially where a grass run is not available. It is of the greatest advantage to large breeds, which suffer from leg-weakness; it supplies abundance of bone-making material, it counteracts any tendency to diarrhœa, and assists greatly to postpone early maturity, insuring a longer period of growth, and consequently larger size. The bone dust should be, on an average, about the fineness of coarse oatmeal. Raw bones pounded have just the contrary effect on chickens to bone-dust; it hastens maturity, causing the pullets to lay early, owing to the quantity of fresh jelly they contain. While, therefore, crushed raw bones are very good if given in moderation to hens or to cockerels a few weeks before exhibition, they should never be given to pullets.

Artificial Hatching by Manure.

"There is nothing new under the sun." Hatching chickens by the heat of an ordinary manure heap was practised in the last century, and forms the subject of an elaborate volume in octavo by the celebrated naturalist Reaumur, a translation of which, illustrated by numerous beautifully executed copper plates, was published in England one hundred and fifty years since, its exact title being "The Art of Hatching and Bringing up Domestic Fowls of all kinds, at any time of the year, either by the heat of Hot Beds or that of the common fire By M. De Reaumur, of London. 1750." This rare and curious book contains many interesting details connected with the development of the chick, and acknowledged "copies of copies" of these plates appear in the most recent works on poultry.

At a meeting of the New York Farmers' Club, held on March 12, Dr. Preterre, of 159 Bowery, exhibited many chickens that he had hatched artificially, and we are informed in the *New York Poultry Bulletin* "that Dr Preterre has this year tried the experiment of hatching eggs in manure, and finds it equally good, and in some respects superior to the incubating machine. He places the eggs in barrels, which are raised from the ground by posts; around the barrels are beds of manure 9 feet thick; when the bed is three days old the eggs are put in, and in forty-eight hours the beating of the heart is visible on breaking the shell."

Reaumur's book gives very ample details as to the management of the hot beds, the arrangement of the baskets of eggs within the barrels, the construction of thermometers necessary to regulate the heat; and he designs a very simple butter thermometer, made by partially filling a small bottle with a mixture of butter and tallow, which by its degree of fluidity or solidity would show when the eggs were at the proper temperature, the liquid becoming very fluid when the heat is excessive, and solid when it is too low; the proper consistence being a little more fluid than that which would result from carrying the bottle under the armpit for quarter of an hour. Reaumur states that this plan was decidedly successful; but, like all other plans for artificial incubation, it has not been extensively practised either in France or in any other country.—*Field.*

MARKING DUCKS.—I live in Romney Marsh, where every cottager keeps ducks, and in some cases they breed several hundreds; the losses are of course very large, as very little is seen of the young ones till they are fit to kill. I still stick to my old mark, a notch hole in each web of the left foot, made by a cobbler's eyelet piercer; but below I give some few of my neighbors' marks: One slit in web of right foot, two slits in web of right foot; one slit in web of left foot, two slits in web of left foot; one slit in each outside web; one slit in each inside web; one slit in outside right and inside left, or *vice versa*; punched holes same as above, which is also varied by removing either right or left heel, or, if wished, any one of the toenails. The above plan, without the last mentioned, will give thirty-four distinct marks.—H. V. C. *in Field.*

A CORRESPONDENT of the N. Y. *Tribune* is evidently not a believer in turkeys. In answer to the question "Why were Job's turkeys poor?" he says: "Because he had no neighbors upon whose crops they could get fat—and thereby hangs a tale; many a tale, in fact. For turkeys are like bees, you cannot keep them at home. Where grain is raised, turkeys are an intolerable nuisance, and for every dollar they bring into the farmer's wife's pocket, they take five out of the farmer's or his neighbor's. Upon grass fields where grasshoppers are plentiful; or upon tobacco fields where the frightful tobacco worm is abundant, turkeys may pay for their feed and depredations upon the grain fields at all seasons of the year; but I do not believe that even at $1 a pound turkeys, as usually raised, ever pay their cost."

The Apiary.

Bees and Grapes.

It has often been insinuated by the ignorant that bees injure fruit; and some time ago, a benighted little village in New England undertook to expel all bees from its limits because of their supposed depredations. An American naturalist of some note, not very long since brought this accusation against the bees, and recommended fruit-growers to protect themselves against these industrious insects by the use of certain recipes that would attract and destroy them. But the great majority of fruit-growers are too keenly alive to their own interests to take any steps toward the suppression of bees or bee-keeping It is pretty certain that by collecting and distributing the pollen of plants, the bees accomplish fructification in many cases where otherwise it would not take place. There is no conclusive evidence to sustain the suspicion of their injuring fruit. Charles Dadant, who is now settled in Illinois, but who for many years kept bees near the hills of Burgundy, says in a recent number of the *American Bee Journal*, it is well established that bees are unable to cut the skin of grapes. In order to ascertain the fact, the most juicy and sugared grapes, pears, sweet cherries, plums, apricots, etc., were put inside the hives; never have the bees attacked them if they were not previously scratched. The experiment was repeatedly made, it was discovered also that the first cutting was made by a kind of wasp, or by birds, or caused by the rain falling when the fruit was ripe.

A Wisconsin bee-keeper writing to the same journal, says, "Last fall I took a branch of Delaware grapes (the most tender variety we have here,) and put it on a hive, directly over the bees, and watched proceedings; but not a single berry was opened; then I broke a few berries, upon which they went immediately to work, sucking them dry, thus showing that something besides bees does the mischief."

The idea is entertained by many intelligent bee-keepers, that where the bees have been suspected, with any air of probability, of doing injury to grapes, the skin of the fruit must first have been punctured by some other insect, thus affording the bees access to the pulp. On this point a correspondent of the *Rural New Yorker*, writing from Marcellus, N.Y., says:—There is much complaint made in the papers of bees eating grapes in the different localities, which I doubt not is true; but I wish some scientific man would give a close examination, even with a magnifying glass, and see whether some insect has not been gnawing the skin in the night; for we know that the corn worm comes at night, eats off the blade, and the snail eats holes in the young tobacco leaf and is not seen in the day time; and there may be insects flying in the night, like the lightning bug, that gnaw the grapes. Now, in this section almost every house has a grape vine, and there are bees kept in many places all over town and this village; and I have kept bees and grapes over thirty years, but have never heard the first complaint. I wish there could be some close examination made."

About Hives.

A tall hive, when extremes are avoided, usually gives the best results. The demand for box honey has increased over that for swarms. We want hives to accommodate us in that respect. The tall hive that was best for swarms gave but little. A hive with a large top will take on more boxes than the tall small one, and the bees will often fill them as quickly as the smaller number. This encouraged us to try a still larger surface for boxes. This was done by placing them at the side of the combs. The depth of our boxes is 5½ inches; one placed on the other made 11 inches, just the height of our frames. Two courses may be set at the side of the comb, and enough can be put on both sides—when the length of ours—to hold eighty pounds, besides those on the top.

Some bee-keepers put several tiers of boxes on smaller hives. But experience shows us that those farthest from the body of the hive, are worked at very slowly. There is a great gain in having every box as near as possible to the main hive. I cannot think of another shape that will admit so much room for boxes in close connection with the hive. If the long hive stood on the end, making it a tall hive, the same number of boxes might be used, but they would have to be piled on each other to a greater depth, making it more trouble to take off boxes, from the lower ones, when only those were full. The main combs of the hive would often become heavy, and break loose, and fall to the bottom. If a piece to support them were put across it would divide the comb so that the queen would keep the brood in the lower part. The space above would be filled with honey, and the boxes on the top would be about the same as if they were on a tier or two of boxes below them.—*M. Quinby.*

Best Time to Handle Bees.—Chas. Dadant, in *American Bee Journal*, says:—Remember that the handling of bees is more easy between ten in the morning and three in the afternoon—in a clear than in a cloudy day—in spring and summer than in fall, and with Italians—pure Italians—than with black, grey or hybrid bees. As to gloves, I cannot advise their use, for they are inconvenient. It is better to leave them alone and learn to handle bees.

Dysentery in Bees not Caused by Quality of Honey.—Mr Quinn writes the *American Bee Journal*. That dysentery is not caused by the quality of the honey is strongly proved by there being none of it when they have been kept sufficiently warm. I know a lot of bees have been kept in the cellar since the tenth of November, where the mercury has not been below forty-two degrees nor above fifty degrees during the time. Never in better condition—combs bright and clean.

Alfalfa for Bees.—It is claimed by some bee keepers that alfalfa, or lucerne, furnishes a long continued supply of food for bees. They do not attempt to class it among the best sources of bee food; but they assert that bees can more than live on it, and that too in seasons when other supplies fail. If it meet even this requirement it will become still another inducement for favoring this valuable crop. We hope those who have bees in the vicinity of alfalfa fields will observe the operations of their stocks, noting also the quality of the honey made from it, and favor the press with their views on the subject.

Bee Stings.—If a person is stung while among bees he rarely escapes with one sting. The first sting is but the signal for attack. It does not remain a personal matter between the offending party and any particular bee; the whole community are "eager for the fray." This general attack, if any, is variously accounted for Some assert that a person who is not scared while among bees is not likely to be stung at all by them; that fright provokes stinging, and that even one sting from some offended bee producing fright, other members of the hive sting because he is frightened. A celebrated bee keeper who has closely observed the character of bees, declares that when one of the hive has deposited his sting the rest, smelling the poison of the sting, go and follow suit, prompted by some mysterious concert of action, without regard to the offence of the party or the frightened state.

When Bee Keeping Don't Pay—What Then?—Hogs have sold for less than value of corn fed in fattening. Cattle brought less than cost of raising. Poultry could be had for less than value of food fed them. Yet all required as much care as if sold at a profit. We would, however, think that farmer very unwise who would quit the raising of live stock or grain, because of low prices or severe winters. If bee-keeping farmers would use as much precaution in preparing pasturage and shelter for their bees as they do for other live stock, I doubt not that a few years of experience, backed with a comparative table of facts and figures, would convince them that bee-keeping would prove as remunerative as any business in which they are engaged. The man who expects a large crop of fine fruit each year, without pruning or cultivating his orchard; he who hopes to harvest a heavy crop of wheat, corn or oats, without properly ploughing or pulverizing the soil; he who expects to cut a heavy swath of hay, every year, from a meadow which he devotes half the year to pasturage; and the bee-keeper who expects to get a large yield of honey without giving his bees any attention whatever, are all sure to be disappointed with their business, and will declare *"it don't pay."*—*Bee Keepers' Magazine.*

Entomological Department.

Insect Queries.

(To the Editor of the Canada Farmer.)

Sir:—I will feel very much obliged if, in the next issue of the Canada Farmer, you publish a means of destroying the following four pests: 1. Caterpillars on currant bushes. 2. Lice on rose bushes. 3. Grubs in the soil, cutting down the cabbage plants. 4. The potato bug.—I am, &c.,

Cartwright. H. McP.

[1. Powdered white hellebore, if properly applied, is an effectual specific for both eggs and larvæ of the currant worm. Give the bushes affected a thorough dusting in the morning before the dew has evaporated, and repeat the application on every reappearance of either eggs or insects.

2. Tobacco smoke is the best and simplest agent for getting rid of this pest. It may be applied as follows: A common tin box, such as dry mustard is sold in, is taken to the tinman, who cuts a hole about half an inch across the bottom, and solders on a tapering tube, something like the nozzle of an oil can. In the cover of the box he cuts another hole, and solders on a tube flaring slightly outward, of a size to fit over the nozzle of a pair of bellows. The box is filled with tobacco, and a live coal inserted just under the cover. The tube is then placed on the bellows, and the latter put in operation. The result will be a smoke such as no respectable insect will endure for a moment.

3. A small handful of salt, or a tablespoonful of petrolium sprinkled about the stem of the plant without actually coming in contact with it, has proved successful in warding off the attacks of the cut worm. When only a few plants are cultivated, a common paper collar-box, with its bottom removed, sunk half its depth in the soil, enclosing the plant, has proved a sufficient protection.

4. See reply to "A Bloomfield Subscriber" in our present issue.—Ed. C. F.]

Habits of the Curculio.

Professor Riley gives in the *Tribune* the following brief summary of the habits of the curculio, which is worthy of being placed on record: The plum curculio winters as a beetle above ground; hence all theories based upon its wintering in the ground are false. It shelters under the bark of trees, brush, or any other rubbish; hence it is more injurious in timbered than in prairie regions, and hence the burning of rubbish and underbrush around orchards destroys large numbers. It can fly; hence all attempts to stop it from crawling up a tree will not prevent its injury. It is single-brooded, and the beetle is long-lived, the female living sometimes for more than a year, and ovipositing during a period of several weeks. It is nocturnal rather than diurnal, and though, during the season of egg-depositing, the female may be found at work through the day, especially in cloudy weather, it generally keeps quiet and secluded until evening; hence the most successful jarring may be done very early in the morning or late in the evening. It may be trapped with chips, as described, especially in the early part of spring, when it more invariably seeks shelter near the ground. It always becomes a pupa under ground; hence very hot, drouthy weather may destroy it in midsummer, by baking it to death. The grub frequently remains in such fruit as falls, some time after the falling; hence the daily picking up and destruction of such fruit is to be recommended. Cherries and the smaller fruits do not fall when infested with it, as do plums, peaches, etc. During its beetle life, both sexes feed as long as the weather admits of activity; while fruit lasts they gouge holes in it, attacking pip fruit when stone fruit is not to be had. At the proper season, and under favorable conditions, these punctures and gougings are instrumental in spreading rot; hence the insect may sometimes do more indirect than direct harm. Jarring should be repeated every morning or evening, from the time the fruit is the size of a pea till it is ripe.

Correspondence.

Our Summer Birds.

(*To the Editor of the* CANADA FARMER.)

SIR,—In the month of February I addressed some observations to you on our "Winter Wild Birds." Allow me now to make a few casual remarks on our summer visitants, not by way of formal essay, but to throw out some hints, and to put in another plea for mercy on behalf of the feathered throng now beautifying and enlivening our woods and fields by their presence and melody.

Have any of your readers remarked the great increase and pleasing additions that are being made every summer to the number and variety of our Canadian song birds, and also, which is a cause or connection of their singing—the fact of their being almost all insectivorous? I think this fact is more evident this summer than ever. Of the birds I will mention I am aware all have been found, and are to be met with every year, over the different parts of the Province, but it is their marked increase, and appearance in places little visited by them previously, I would call attention to. Undoubtedly our native migratory summer birds are ten times more numerous now than they were before the clearing up and cultivation of the land, and one-third of them are new. As agriculture improves upon nature, by making not only "two blades of grass to grow instead of one," but by making crops useful for man and beast to spring up and flourish where once only grew the pine, the fern, and the bulrush, so also, in the train of improvement come the armies of insect enemies of the crops and the orchard. But nature is fertile of resources, and wonderful as a preserver of the "balance of power" in her various kingdoms. Each insect has its foe, either in the shape of bird or beast, or parasitic persecutor. Though we cannot, as yet, point to any enemy (apart from our own destructive exertions) which may be said to have proved a match for the Colorado beetle, that foe will be developed in the course of time, and the scourge will disappear just as surely as other pests to the crops have come and gone. Of all the remedies or preventatives of the plague of insects our summer birds are the most important in the economy of nature, and their increase from year to year is only the carrying forward of a beneficent Divine law. By far the greater majority of our Canadian wild birds are insectivorous. Indeed, it may be questioned whether, with the exception of the canary, snow bunting, and one or two others, we have any exclusively semenivorous birds in the country. The much-abused crow, the cedar bird (or waxwing), the blackbird, or properly, red winged starling, and the woodpecker, especially the red-headed, have all attained a bad fame in the opinion of the vulgar as grain and fruit destroyers. Those who have studied their habits carefully know that neither grain nor fruit is the proper or natural food of any of these, and that such is the case may be proved as clearly from the conformation of their bills as that the beak of the eagle and hawk show the latter to be carnivorous. The few cherries that are carried off during one or two days of summer no more prove that such is their natural provender than that *man* lives on cherries because he also likes them in their season, and would like to keep them all for his own cheek, quite forgetting the debt of gratitude he owes to the robin, the thrush, and others of the feathered race for their manifold grub destroying services, as well as for the sweet delectation he enjoys from their warbling "wood notes wild." How important rather that *all* our wild birds be taken under the protection of the farmer and the community at large, as they have already been in a nominal way by the Legislature, and without which intelligent individual protection on every farm all legislative bird-protecting enactments are valueless.

After so long an introduction, which, however, might have been much longer did your space permit, I rejoice to notice, Mr Editor, a vast increase in the numbers of our very common grey birds, both the larger and the smaller rufous-headed species. This modest little fellow, unobtrusive in manners as in livery, and yet so confident in man as to build his lowly nest by the side of the head-ridge furrow, is a great devourer of grubs and insects. I noticed one the other day in proud possession of an enormous cut worm, more than half the bird's own length, and which when delivered over at the table in the grass would doubtless have to be served up in suitable proportions or cuts for the wee gaping bills. They also consume vast quantities of the saw-fly, or currant caterpillar, a pest that has nearly exterminated that once common and delicious preserve fruit in this township.

The Bob o' Link or Orchard Oriole (*Xanthornus varius*), a famous hand at his grub, is now becoming quite common in all parts of Oxford, though so lately has he made his appearance in this locality that I meet with few that know on sight his name, so familiar in the school-book rhyme. His multitudinous clear chinking and hurried notes, either seated on an apple tree or jerking his flight from one to another, can be heard at present every morning and throughout the day or evening, from every orchard. He is no longer to be regarded as a purely Yankee bird, but, if an emigrant like ourselves, he is a welcome one, and a pleasant addition to our woodland choir.

The splendid Baltimore Oriole (*Ypantes Baltimore*) is this summer with us in full force, and his appearance in our woods cannot fail to attract attention from the beauty and brilliance of the colors of the male. That your rural readers may be able to distinguish him from the flaming Red-bird, or Scarlet Tanager, we give the description minutely. The head and throat, together with the upper part of the back and wings, deep black, except an orange bar upon the shoulders. The lower part of the back and the whole of the under surface are bright orange, warming into scarlet on the breast. The edges of the secondaries, the exterior edges of the greater wing coverts, and part of those of the primaries, are white. The tail is black and orange. The female much more sober in coloring, being nearly all over of a dull green or orange. The origin of the name dates back to the first settlement of America, black and orange being the colors of the arms of the Roman Catholic Lord Baltimore, to whom and [illegible] co-religionists the State of Maryland was first granted. Though till lately not much seen itself, few can have failed to notice the pensile nest of the oriole hanging at the outer extremity of a high slender twig, generally of the elm, when winter has stripped the woods of their foliage, and rendered it and many other nests apparent [illegible] pected them. Like Bob o' Link, this oriole belongs to the very interesting fam[illegible] and their performances in this art [illegible] are so clever and curious as to [illegible] from an old lady, to whom Wilson once showed one of the nests, the compliment that [illegible] might learn to darn stockings.

Without further alluding to others of our summer visitants in which an increase may be observed, I will close these remarks by simply saying that in none of the feathered tribes is the increase more observable than in the delicate, beautiful, and ever delightful little humming birds. Formerly we used to have just one pair frequenting the garden and orchard during the brief sunny summer period of blossom and flower, and such is the experience also of most of my friends who have an eye to such observations. This year they may be counted by scores on our fruit trees and flowering currants, if, indeed, it is possible to count accurately such tiny, evanescent creatures, as they flit and flirt with each other on the wing. I watched them one day (May 26th) on a large flowering currant for more than an hour. During that period there were seldom fewer than six present at a time, jerking and hovering about the [illegible] with one another or with the big humble-bees, about as large as [illegible] blossomed sprays. That they were not the same individuals all the time was evident, for every eight or ten seconds one would mount aloft and dart off in a straight line through the air, whose place the next moment was filled by another. There were at least three kinds of them, the prettiest being our common Canadian humming bird, the ruby-throat.—I am, &c., A. FISHER.

Those English Sparrows Again.

In reply to a number of inquiries regarding the habits of this bird and the benefits likely to accrue from its importation, we must frankly admit that our personal observations have not been of sufficiently extended a character to justify us in expressing a decided opinion upon the matter. That the birds devour, annually, a very large number of injurious insects there is no doubt, but whether their service in this respect is not more than conterbalanced by the quantity of seeds, buds, and small fruits they destroy, remains to be proved. We publish below one or two extracts *pro* and *con*, leaving the reader to draw his own conclusions.

A correspondent of the *Massachusetts Ploughman* writes:—"We here are troubled with worms in the land to such an extent that it is a rare thing to raise anything but sugar cane. When even we had a few thousands of those birds to start with they would soon rid the land of this nuisance by eating the [illegible] that lays the eggs that produce the worms."

To which the editor of that journal replies:—"The English sparrow is unquestionably very destructive to insects and [illegible]. They have effectually removed those pests the measuring-worms, and other caterpillars which denuded the trees of their foliage in the parks of Philadelphia, New York and Boston, and [illegible] are recognized as of the greatest value as a means of subduing a great preponderance of insect life. Gardeners in Europe accuse the sparrows of preferring in the gardens and fields, eating the seeds of plants and the small fruits. In this country [illegible], however, the bird is recognized only as a destroyer of insects, and we should judge that the benefits it can and does render much more than compensate for any injuries it may inflict."

The [illegible] handles the english on the other side as follows:—"We have long denounced the sparrow, and for good reasons. He is not, strictly speaking, an insectivorous bird—he is the inveterate enemy of all such, and he drives away all the feathered beauties who, while they charm you with their blithe carols, are your industrious allies in the destruction of that innumerable army of insects which infest your gardens and [illegible] your fruits and vegetables. You have only to look at the bill of a sparrow to be convinced that he is not an insectivorous bird; if he destroys caterpillars in New York it is only because he can find nothing else to eat. But one thing is certain; there is not a municipality in Europe that has not [illegible] upon the head of the [illegible], greedy [illegible]."

"By careful investigation," [illegible], "it has been ascertained that a single pair of English sparrows, during the infancy of their brood, feed their little ones an average of about 3,360 caterpillars in a week! Now, take your slates and pencils my little friends, and see how many caterpillars in a month the sparrows killed by that Sussex County [illegible] would have destroyed if they had been permitted. Think what quantities of pretty leaves, how many bushels of grain, and what an abundance of nice fruit must be destroyed by the taking off 17,000 worm-eating birds!" Upon which a contemporary remarks: "Having made this calculation, will the "little friends" again take their slates and figure out for us the profit or loss incurred by the driving away of all our native song-birds and the injury occasioned to grain by this purely granivorous foreign pest—the English sparrow? A greater nuisance than this bird was never imported; and such half-knowledge as that exhibited by the editor of *St. Nicholas* tends to diffuse an almost unmitigated evil."

The Country Gentleman says:—"It appears that the balance of nature has been badly upset in Melbourne, Australia, by the introduction of the English sparrow. The native birds, many of them insect eaters, have been driven away from gardens by the pugnacious sparrows, through the rapacity of which, small fruits are devoured in a manner not before witnessed."

To all of which we would exclaim, "Who is sufficient for these things?"

The Colorado Potato Beetle.

(*To the Editor of the* CANADA FARMER.)

SIR:—Enclosed find five bugs, or beetles, a new species to me, which I found on one potato vine, and which I suppose to be the real potato bug. The early vines here have them on in large numbers. If they are the real bug, please notice it in your next issue; and if they are not, perhaps you can, through the CANADA FARMER, give some information respecting them.—I am, &c., A BLOOMFIELD SUBSCRIBER.

[The insects before us are full-grown specimens of the Colorado Potato Bug. Every potato plot in the country is swarming with them. Paris green, mixed with flour or plaster in the proportion of one part of the former to twenty-five or thirty of the latter, and dusted on the plants, is certain death to the insects; but it should be handled with caution, as it is very poisonous. The best time to apply it is in the morning, before the dew has disappeared. The vines should also be examined every day or two, and all bugs, and leaves containing the eggs and larvæ, removed and burned.—ED. C. F.]

The Crops in the West.

(*To the Editor of the* CANADA FARMER.)

SIR;—I [illegible] had occasion lately to take some[illegible] through the counties [illegible] the lake townships of [illegible] that probably a few [illegible] in that section [illegible] readers of [illegible]

[illegible]

[illegible] AGENT.

P. S.—[illegible] paper on several occasions [illegible] I regret to find that [illegible] as widely as it ought to be.

A.

[[illegible] will please accept of our thanks for [illegible] communication, it contains exactly the [illegible] we would like to have sent us from all parts of the country. We quite agree with the closing sentiment in his postscript; but "Onward" is our motto still, and will continue to be [illegible] a copy of the CANADA FARMER shall find its way into the hand, as we hope the principles it advocates shall find their way to the heart of every farmer in the land.—ED. C. F.]

Scab in Sheep.

(*To the Editor of the* CANADA FARMER.)

SIR:—Being a subscriber to your valuable paper, and having every confidence in your replies to correspondents, I would like to have your opinion as to what is the best preventative and cure for scab disease in sheep. Being in the wool trade, I am very often asked to give my opinion on the subject.—I am, &c., THOMAS BARRY.

Omaha, Nebraska.

[Many different applications are recommended for the cure of this disease. Mercurial preparations are very effectual, but they have to be used with caution. A very good wash is compounded as follows: One ounce and a half of tobacco, one ounce of white hellebore, and about three pints of water. Apply to the parts affected every third or fourth day. Mr. Henry Woods, chief manager of one of the largest and choicest Southdown flocks in England, recommends soft-soap, one and a quarter pounds; shag tobacco, one pound; spirits of turpentine, one pint; spirits of tar, one-half pint; white arsenic, three ounces. This, to be safe and effectual, must be boiled so as thoroughly to dissolve the arsenic, and that he regards as an important point. Then add water enough to make four quarts of the wash for each sheep.

The way to make it most effectual is to open the wool by making three marks on each side of the sheep, also one down the shoulder, one on each side of the neck, one down the breast, and one down each thigh, and into the marks pour the liquid. Don't be in a hurry about it. Do the work well. Rub the liquid well into the skin with the hand. Examine the sheep every two or three days for three weeks, by which time the disease may be expected to be eradicated. If there are any white spots, rub on some of the following ointment: mercury, four ounces; Venice turpentine, three ounces; spirits of turpentine, one ounce. Let them be worked up and thoroughly mixed together, then add about one and a quarter pounds of lard melted over a slow fire, stirring while melting. When taken off, continue to stir till c[illegible] so as to mix the mercury well.—ED. C. F.]

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The Canada Farmer.

TORONTO, CANADA, JUNE 15, 1874.

Manufacture of Tobacco in Canada.

Though probably nine out of every ten of our readers indulge in the soothing weed, we question whether one in a hundred has anything like a correct idea of the numerous and varied processes it has to undergo before it is in proper condition to be handed over the retailer's counter in the form of five, ten, or twenty cent plugs.

As in the case of most other articles of commerce, the manufacture of tobacco exemplifies the division of labor to a remarkable extent; and to those who feel curious as to the practical proof of this fact, we know of no more pleasing and entertaining a method of spending an hour, than to pass it in the "Berlin Pioneer Tobacco Factory"—one of several interesting institutions to be met with in the flourishing town of Berlin. The manufacture of tobacco, in "fine-cut" form, had been carried on in that town for some time by a German, whose name we cannot now recal, and on his retirement the business was taken in hand and largely extended by the present firm, of whom, we understand, several Galt gentlemen are leading partners. The factory is situate near the northern or Waterloo end of the town, and presents on the whole a rather dilapidated, and certainly a very unassuming external appearance. One is surprised, however, on entering, to witness the contrast presented between the quiet and gloomy scene without, and the busy, bustling commotion within, where between fifty and sixty hands of both sexes are employed in the various departments. The kindness and affability of the obliging manager, Mr. Oeschlager, makes the visitor feel at once at his ease, and the various processes of plug making are explained to him with readiness and clearness. Let us follow them, as far as our memory serves us, beginning with the raw leaf as it is imported closely packed in large hogsheads from Virginia and other tobacco-producing states of the union. The rough contents are first handed over to the "sorters," a number of boys and girls who sit, each beside his or her supply, and tear the sticking leaves apart, sorting them according to quality into three or four separate lots. An extra good, large, well-colored and heavily-bodied leaf is set aside for an "outside wrapper;" the next quality for an "inside wrapper;" and the remainder is arranged into first and second-class "fillings." From the "sorters" the several heaps are removed to an apartment at the rear end of the building, where they are thoroughly sprinkled with a fluid compound of gum, sugar, and several other ingredients which have been mingled and boiled together in a large caldron, and which imparts to the tobacco that delicious flavor so highly prized by lovers of the weed. After a complete saturation with this mixture, the "sorted" and "sprinkled" matter next passes through the hands of the "stem extractors," a half dozen or so, whose exclusive business it is to strip all the soft, leafy portions away from the tough, fibrous stems; after which the tobacco, thus sorted, sprinkled and picked, is passed along to the "fillers" and "wrappers," of whom we counted twenty, mostly girls, arranged in rows along four or five benches. Each of these had the three different qualities arranged in bundles before her, viz., the "filling," the "outside," and "inside" wrappers. Selecting first a small handful of "fillings," she deftly manipulates them into shape, then rolls around them one, sometimes two "inside" wrappers, and afterwards a nice "outside" one. Slipping the little packages along to the end of her bench, where a jointed knife is fixed, it is cut to the desired length, according as it is to be a five, ten, or twenty cent plug, and laid away.

This filling and wrapping process is accomplished with marvellous rapidity—we should judge at the rate of from three to five packages per minute. The little packages, resembling so many two ounce tea parcels, are next submitted to the "kilning" or drying process. For this purpose they are laid out in layers upon separate shelves arranged from floor to ceiling, around the sides of a small room, which by means of an adequate heating apparatus, can have its temperature raised to 180°, thus not merely drying the tobacco but rendering it quite hard and crisp to the touch. From the kiln the packages are removed into a somewhat lower temperature, where they remain, still in layer arrangement, for some hours longer, after which they are packed in large wooden boxes to be "sweated," *i.e.*, they become in the course of a few hours quite moist, soft and pliable again. Then begins the "pressing," which is perhaps the most interesting process connected with the manufacture. For this purpose frames are provided, measuring 3x4 feet and about 3 inches in thickness (but this depends entirely upon the dimensions of the desired plug), divided off into compartments corresponding in size to that of the plug to be manufactured, and each compartment separated from the other by iron partitions. To each such frame there is a corresponding cover, the lower side of which has attached to it rectangular hardwood blocks, corresponding in number, size, shape and arrangement to the compartment of the frame, so that the one fits nicely into the other. The tobacco "cushions" or packages are stuffed singly, or sometimes in pairs, into these frame compartments, and the cover is laid on, its block fitting into the several compartments and resting on the tobacco within them. Another frame is treated in a similar manner; another, and still a third, up to sixteen or twenty, when they are placed one above another, and the whole removed to the press. This latter is conducted upon the hydraulic principle; is, in fact, a powerful hydraulic press, with force pump and all complete—oil, however, being used instead of water—and capable of imparting a 300 ton pressure. When sufficiently squeezed for the first time, they are screwed down to their position ere the pressure has been slackened, and removed to one side, to remain for some hours before the screws are loosened again. The first pressure usually determines the length and thickness of the plugs. Removed then to another frame, with differently shaped compartments, they

receive a second pressing which determines their width, and lastly comes the final squeeze which renders them glossy, hard, compact, and ready for market.

The Berlin Pioneer Tobacco Factory has been in existence only about nine months, but the extension and rapid growth of their business during that time may be inferred from the fact that to-day they employ between fifty and sixty hands, and that they have already manufactured and sold over 172,000 lbs. of tobacco, thus yielding to the country in nine months a revenue of nearly thirty-five thousand dollars.

Dynamite for Land Reclamation.

The following report of experiments with the newly discovered blasting agent, dynamite, which were carried out on the estate of Sir W. S. Maxwell, is condensed from the *Glasgow Herald*. The experiments were conducted by Mr Downie, assisted by Mr. John Scott, manager of the Glasgow Canadian Land and Trust Company, and others interested, the principal object being as stated in a previous issue—to test the utility of the material for land reclamation in this country.

Dynamite is nitro-glycerine mixed with a siliceous earth, found in Germany, which absorbs and retains the liquid explosive. It is a moist and plastic solid, resembling in color the finer qualities of raw sugar, and the great advantage of the substance over gunpowder is its greater comparative safety, as it will not explode without percussion

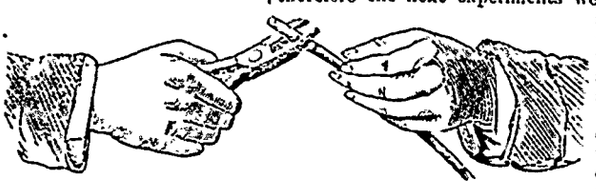

FIG. 1.—A Bickford fuse is cut clean and inserted into a detonator cap till it reaches the fulminate. The open end of the detonator cap is then squeezed to the fuse, with a pair of nippers.

We quote the actual experiments verbatim from the *Herald*, illustrating the several operations of "loading" a borehole, by engravings kindly lent us by Messrs. Young & Miller, of this city.

After performing some preliminary and somewhat elementary operations, Mr. Downie turned his attention to the root stumps of a number of trees that had recently been cut down. By means of an auger, a hole about 1¼ inches diameter was bored vertically to a depth of 12 or 15 inches in one of the stumps, and when it was found to be quite through the wood of the stump it was continued by means of a punch to a depth of fully 2 feet. Two or three cartridges were put into the bore-hole and firmly driven home by means of a wooden rammer. Then a small cartridge, called a "primer, prepared with a cap-tipped fuse, was dropped in and rammed home, and the hole was tamped or stemmed by filling it to the top with water, care having in this case been taken to put a luting of clay round the junction of the cap with the fuse. The latter was fired, the observers betook themselves to a respectful distance, and in a brief space of time a great upheaval took place. The noise of the explosion was in a great measure smothered When the members of the party returned to the spot they found the stump to be rent in the most extraordinary manner; but the general opinion was, that the bore-hole had been made so deep that the energy of the explosion had spent itself too much upon the sub-soil, and too little upon the wood. The stump next operated upon was bored to a less depth, and the result of the blasting process was more effective In either case a few strokes with an axe, by way of severing the several root-members, would be quite sufficient to leave the woody masses in such a condition that they could easily be dragged out and lifted away

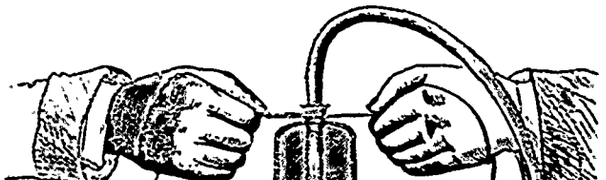

FIG 2.—A Primer cartridge (distinguished by the word *Primer* printed in red thereon) is opened at one end, the detonator cap with fuse affixed, *inserted as deep as shown*, and well secured with a string.

It was suggested by Mr John Scott that the operation of piercing with the auger should be dispensed with in blasting the next root-stump, so as to do the work with as great economy of time as possible. In this instance, therefore, the pinch was brought into requisition instead of the auger, and by means of it a hole was driven horizontally inward between two of the principal root members to about the centre of the stump. The hole was charged and fired in the usual way, the result being a much greater amount of eruptive and disruptive action, with a smaller expenditure of time and labor. One or two other root stumps of large size were blasted in the same way, and it was clearly demonstrated that, under certain circumstances, dynamite could be employed to more advantage immediately underneath rather than in the mass of material to be operated upon. Mr. Scott expressed himself to be fully satisfied, from what he had now witnessed, that he could use the new blasting agent with great effect and economy in land-clearing operations in Canada, so far as tree roots were concerned, and therefore the next experiments were with boulder stones, all of which were of very hard, tough and solid whinstone.

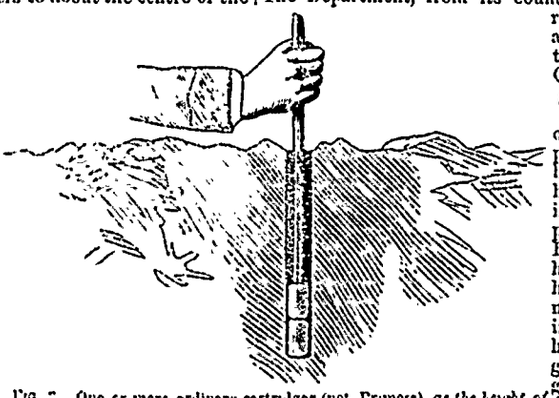

FIG 3.—One or more ordinary cartridges (not Primers), *as the height of charge may require*, are inserted into the borehole, and *each cartridge* squeezed home *separately* with a wooden rammer so as to completely fill the borehole.

The first boulder that was tried was out in "the open." One small cartridge, properly prepared, was laid on an inclined face of the stone, then covered loosely with soil, and fired. No rupture resulting from the shot, another was resorted to, a shallow groove on another part of the bonder being selected for laying on the charge. The latter was loosely covered, as before, and fired; and such persons as had not seen a similar experiment previously were greatly surprised at the destructive effect of the explosion, when the small amount of the charge was considered, together with the fact that no bore-hole was driven into the boulder. Other two large boulders were next attacked in an adjoining field that was being drained, the stones having been met with in digging the drains. The first of them was embedded in tolerably firm ground, and on being fired *in situ*, without any bore-hole, was so severely "punished" that it was almost crumbled into dust. Owing to the fact that the other boulder was embedded in a deposit of sand, the small charge of dynamite used at first seemed to have spent itself in burying it to a much greater depth in the sand; but on employing a somewhat larger charge, besides being buried still deeper in the sand, the boulder was so thoroughly broken into pieces that it might well have been used for road metal.

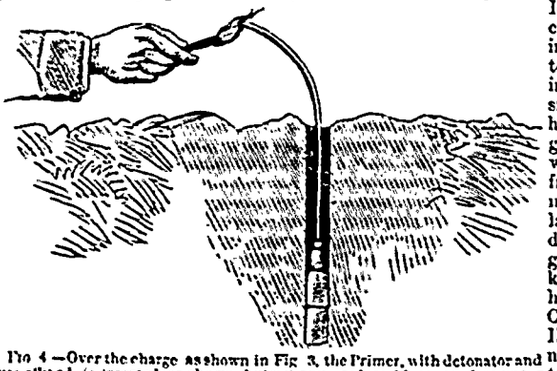

FIG 4.—Over the charge as shown in Fig 3, the Primer, with detonator and fuse affixed, is inserted, as shown, but not squeezed, and loose sand or water is poured on as tamping. The charge is then ready for firing.

THE Butter and Cheese Exchange of New York have voted in favor of reciprocity between Canada and the United States

MAIL accounts from the south-western parts of Minnesota represent the ground as nearly alive with young grasshoppers, which have already commenced eating vegetation.

The Most Profitable Crop.

It may be interesting to every farmer to know which is the most profitable crop in the various states. The Department, from its county correspondents, received last March answers to the question, which the Commissioner thus generalizes:—

In Maine, hay occupies the first place and dairy-husbandry the second; hay and stock-raising are of equal importance in New Hampshire; dairy-husbandry stands high in its predominance in Vermont; in Massachusetts, hay first, market-gardening next; the garden and the dairy divide the honors in Rhode Island; and tobacco stands first in Connecticut. There is much diversity in New York, but dairy-husbandry is far in advance, being the choice of one-third of the counties. There is much variety in New Jersey, though market-gardening stands first. In Pennsylvania, manufacturing and mining make a varied production most popular, few counties indicating very decided preferences, though wheat (as few would suppose) holds the first place in one-sixth of the counties. In Delaware, tobacco; in Maryland, tobacco and fruit growing. Of more than fifty Virginia counties expressing decided preferences, ten favor tobacco, nine "mixed husbandry," six corn, five stock-raising, five market-gardening, and others pea-nuts, sheep-husbandry, fruit growing and wheat. In North Carolina corn stands numerically before cotton. In Florida sugar-cane is preferable, while cotton predominates in South Carolina, Georgia, Alabama, Mississippi, and in Texas. In Arkansas corn stands first, and in Tennessee hay and corn are preferred. In West Virginia corn and stock-raising; in Kentucky, tobacco and corn; in Ohio, great diversity appears, sheep-husbandry, corn, general cropping, wheat, hay, and fruit-growing; and in Michigan a similar variety—wheat, dairying, and fruit-growing. Corn is king in Indiana, and hay prime minister. Corn is also first in Illinois, and wheat next. In Minnesota, wheat; in Wisconsin, wheat and the dairy; in Iowa and Missouri, stock-growing, corn and wheat. The order in Kansas and Nebraska is wheat, stock-growing, and corn; in California, wheat sheep-husbandry and fruit-growing; in Oregon, wheat and stock-growing.

Eulogy on Canada.

At a recent meeting of the Boston Board of Trade, Mr Atkinson spoke at length and with signal ability in favor of free trade with Canada. He urged the vast importance of removing the trade barriers between the two countries, and pictured the resources of Canada that might be made available for use in the States. We have room at present only for a few of Mr. Atkinson's remarks in one department of his address:—"What is the Dominion? How few can answer. I remember the enthusiasm with which our great Governor Andrew spoke of the lower British or Maritime Provinces of the Dominion the last time I dined with him before his death. He compared Nova Scotia and New Brunswick in area and mineral wealth to New York and Pennsylvania, and declared them equal, and he alleged, that what they lacked in agricultural power, if anything, was more than made up in the wealth of their fisheries. Passing by them, only consider how we may spare our too much

thinned-out forests and yet barely touch the timber of Upper Canada. Then think of the 820,000 square miles of fertile soil of Lower Canada underlaid with limestone, of which we in New England have none, under wheat cultivation; the natural home of wheat and barley, the land flowing with milk, and rendering to the industrious farmer the fleeces of the long woolled sheep, for which we have scarce an acre that is fitted this side of Oregon. * * *

"I have asked, what is the Dominion? Its area is equal to that of the whole United States, Alaska included, or 3 4 [illegible] square miles. What does it possess? One half is covered by vast forests, from which we must draw our supply of lumber, cost what it may, and subject to whatever tax a bad revenue system may impose on us. These forests are their wealth—they are our necessity. The removal of these vast forests is one reason why the population of Canada has increased so slowly. Their lands cannot be occupied, like our prairies, at an instant's notice. It takes a generation to remove the forest and make room for the wheat, but bear in mind that the culture of wheat can only be maintained, with our present knowledge of agricultural chemistry, on land that has produced forest trees. In the prairies its exhaustion of the alkalies soon takes place. The Canadas must, therefore, be the future granary for wheat for our own country. Next, the finest ores of iron and copper exist in inexhaustible abundance in Canada, as well as in the Lower British Provinces, and these ores even now supply no small portion of the consumption of the United States. These Canadian ores have no adjacent supply of coal, and are valuable only as they can be brought into connection with the coal field of this country. Among our states, none have so great an interest in procuring a free and ample supply of these ores as Illinois and Indiana, underlaid as they are with coal, and needing, as they do, the iron [illegible] for their country crossroads. We speak as if our railway service had come near its end, when, in fact, it has only begun. The best grazing country in the world lies in this Dominion; will it harm any one here to be able to exchange boots, shoes, clothing, [illegible] and the like for the best and most ample supply of beef, mutton, butter and eggs? Yet, in the absence of a treaty even the privilege is in part forbidden, and because we cannot sell we cannot buy; hence the best of their supply passes across the water to enable our competitors in manufacturing, whom we so much dread, to compete yet more effectually with us. The finest barley, the heaviest oats, and the best potatoes are the product of the Maritime Provinces. Do we need them in New England? Is the cost of living so low with us as to make it fit to reject this abundance because it can be had cheaply? Would their competition affect our farmers injuriously? Far from it. These are the coarse products of agriculture; our farmers can do better. Not many years since the finest wheat in the country was raised in Central New York; soon the soil was exhausted for wheat and little is now grown. Did farming become less profitable? Far from it; the farmers turned their attention to grazing, to butter and to cheese and to fruit, and now farming in that section is thrice as profitable as wheat growing was. The same thing would occur in New England. Give us an abundance of these coarse products at low cost; let us have the barley, oats, potatoes, fish and the like from the British provinces, then we decrease the cost of living to all our operatives, and the difference would be spent in milk, butter, cheese, fruit, and the finer products of agriculture raised by our own farmers on our own lands in the immediate vicinity of consumers, at far greater profit than can be made in those coarse and heavy products that will only pay for distant transportation by water—not by rail. I have thus feebly described what the Dominion of Canada is in the power of producing just such articles as we require to consume."

Second Duke of Hillhurst.

We learn that Mr. Robbins, the gentleman who purchased *2nd Duke of Hillhurst* at Col. King's sale, for $14,000, has lost the animal through delay in making a settlement. He left for Buffalo on the evening of the day of sale to make the necessary arrangements, but on Saturday telegraphed to Mr. King that he had failed there, and would have to go to New York. Col. King telegraphed in reply that he did not consider himself bound to delay any longer, and that the *2nd Duke of Hillhurst* would return to "Lyndale." We understand that he now refuses to part with the Duke at any price.

Summing up the Profits.

"As an investment," says the *Country Gentleman*, "we think the purchases by Col. W. S. King, at Mr. Campbell's sale in September last, may be safely pronounced a success. Of six head bought at that time five were sold in Chicago, May 21st, and we make the account as follows:

	Price paid.		*Price obtained.*
Peri 5th	$1,300		$4,000
Peri 4th	1,700	$3,000	5,240
True Blue, b. c., out of Peri 4th, October 22, 1873		2,240	
Miss Gwynne	1,700		3,000
Mazurka 9th	600	700	1,800
M. of Lyndale 4th, out of M. 9th, Nov. 10, 1873		1,100	
Moselle 6th	800		1,600
Cherry Constance	1,100		Not sold
Paid	$7,200	Received,	$15,640

STILL ON HAND—Cow Cherry Constance, if nothing has befallen her, and her produce, if any—also produce of cows Peri 5th, Miss Gwynne and Moselle 6th, if they have brought calves since Sept. 18th, 1873, as might have been expected. The account for the eight months would therefore show a purchase of six head, a sale of seven at more than double the entire original cost of the six, and the not improbable existence of five on hand."

Ancient Agriculture.

Among the Egyptians of olden times, the priests and soldiers owned the land; the soldiers possessed about six acres each near the Delta of the Nile. In times of war they equipped themselves; when war had ceased and tumult subsided they returned satisfied to the sacred river, and made its fertile alluvium teem with verdure. There they cast their bread on the water, they reared the flax from which the royal vesture was woven; and from it the ephod of the priests were spun. The remnants of the winding sheet of the mummies, viewed by the microscope show remains of flax. There they produced herbs and roots to supply the world with drugs. They also produced wheat and leguminous vegetables, which have been found in mummy cases. We may know that agriculture was a part of their wise men. Behold the pyramids; and ask what muscles could pile them save those made strong by the best products of the land. It was the strength gained from the soil that was sufficient to rear old Carnak and construct the mighty temples of Thebes. The Carthagenians paid great attention to agriculture, the kingly ones cultivated the soil and princes toiled in the field. When the Romans spoiled the land the only books they found worth preserving were twenty-eight volumes on agriculture. With the Spartans, all know that agriculture was not regarded the laws of Lycurgus prohibited the soldiers from cultivating the soil; the slaves did this. When a nation like the Spartans neglect this noble pursuit they must resort to the black broth.

Short-horn Sale Pleasantries.

The Chicago *Inter-Ocean*, in its account of Col. King's sale recently, says:—

"One of the most amusing incidents of the sale was the spirited contest between a sturdy Illinois breeder, Joseph Chorn, of Towanda, and another gentleman, for the possession of a pair of heifers, Miss Leslie and Miss Leslie Napier. Mr. Chorn followed the bids of his adversary with five-dollar bids, and sometimes a bid of fifty dollars would be the evident intent of scaring the Illinoisian off, but he would sing out "and five," as a capper to every bid. The contest grew exciting, and cheer after cheer would follow each "and five" of Mr. Chorn, from the crowd, who admired his pluck and perseverance. At last it became certain that Mr. Chorn's five-dollar bids would win, and both animals were struck off to him, the former at $2,005, and the latter at $2,015. The fight for the possession of the calf seven months old, True Blue, toward the close of the sale, was a severe and hotly contested one. The little red and white beauty was sired by the 2d Duke of Oneida, 9926, and has in his veins crosses of the best strains in the world. The first bid was $300, and while the offers were promptly given they were rarely over ten dollars in amount. More time was spent in selling the little fellow than with any other animal, and the bidding was divided between some six or seven parties from Illinois, Iowa, Michigan, and Kentucky. The size of the animal and the eagerness of the bidders infused the crowd with a merry spirit, and many a shout arose from the visitors from any particular state when the bidding hung for a moment on the offer of one from their state. At last Illinois won the field, and True Blue became the property of P. A. Coen, of Washburn, at $2,240."

Dominion Grange.

The Dominion Grange Patrons of Husbandry was organized in London, Ontario, on the 2nd inst., by delegates from the different Granges in the Dominion. The following officers were appointed:—

WORTHY MASTER—Bro. S. W. Hill, Ridgeville, Welland County.

OVERSEER—Bro. T. Lett, Danville, Quebec.

LECTURER—Bro. A. Gifford, Meaford.

STEWARD—Bro. W. Weld, London.

ASST.-STEWARD—Bro. Capt. Burgess, Hyde Park.

CHAPLAIN—Bro. Wm. Cole, Sarnia.

TREASURER—Bro. Adam Nichol, London.

SECRETARY—Bro. T. W. Dyas, London.

GATEKEEPER—Bro. L. Galer, Dunham, Quebec.

CERES—Sister Steed, Sarnia.

POMONA—Sister Whitelaw, Meaford.

FLORA—Sister Weld, Delaware.

DEPUTY ASST.-STEWARD—Sister Armstrong, Plympton.

The following Executive Committee were appointed:—J. F. Cass, L'Original; Stephen Wade, Union; Matthew Garner, Woodford; James Armstrong, Camlachie; Captain Burgess, London; H. Anderson, London.

DECLARATION OF PRINCIPLES.

Motto.

We heartily endorse the motto: "In essentials, Unity, in non-essentials, Liberty; in all things, Charity."

Specific Objects.

We shall endeavor to advance our cause by laboring to accomplish the following objects:—

To develope a better and higher manhood and womanhood among ourselves.

To enhance the comforts and attractions of our homes and strengthen our attachment to our pursuits.

To foster mutual understanding and co-operation.

To maintain inviolate our laws, and to emulate each other to hasten the good time coming.

To reduce our expenses, both individual and cooperate.

To buy less and produce more, in order to make our farms self-sustaining.

To diversify our crops, and crop no more than we can cultivate.

To condense the weight of our exports, selling less in the bushel and more on hoof and in fleece.

To systematize our work and calculate intelligently on probabilities.

To discontinue the credit system, the mortgage system, the fashion system, and every other system tending to prodigality and bankruptcy.

We propose meeting together, talking together, working together, buying together, selling together, and in general acting together for our mutual protection and advancement, as association may require.

We shall avoid litigation as much as possible, by arbitration in the Grange.

We shall constantly strive to secure entire harmony, good will, vital brotherhood among ourselves, and to make our order perpetual.

We shall earnestly endeavor to suppress personal, local, sectional and national prejudices, all unhealthy rivalry, all selfish ambition.

Faithful adherence to these principles will insure our moral, mental, social and material advancement.

A constitution and code of by-laws were adopted, and arrangements made for the extension of the Order throughout the Dominion by authorizing the Masters of Granges to act as deputies for the organization of new Granges.

The first meeting of the Dominion Grange was decided to be held at Toronto on the Tuesday of the Exhibition week, at 2 o'clock p.m.

Aid to Agricultural Colleges.

The United States Agricultural Congress at its late meeting in Atlanta, Georgia, memorialized Congress, asking that one-half the proceeds from the sale of public lands be donated to the support of agricultural colleges, education, &c. Mr. Morrill, of Vermont, has already presented the memorial, and there is little doubt the petition will be granted. The Massachusetts Legislature also, during its recent session, agreed to set apart $18,000 in aid of the Agricultural College of that state.

Agricultural Intelligence.

Short-horn Sale at Prebendal Farms, Aylesbury, England.

This was a joint sale of stock belonging to Mr. J. K. Fowler, of Aylesbury, and Mr Joseph Robinson, of Berkhamstead Notwithstanding the unpromising state of the weather early in the day, there was a large attendance, including many of the elite of the Short-horn world, and the competition was in some instances very keen. Of the 29 females sold, 14 belonging to Mr. Fowler brought $7,177, making an average of $513. Mr. Robinson's 15 went for $3,819 averaging $251 The 29 females together made therefore the sum of $10,996, or an average of $379. Six bulls and bull-calves realized $1,180 averaging $197. Lord Chesham bought the old Charmer cow, Sunrise, for $315, and Secrecy, of the Sunrise family, for $525. Mr. Casswell bought Surmise 3rd for $551, and gave $630 for a Charmer cow, and $357 for her February heifer calf of this year Princely, a Fawsley Furbelow with Bates and Booth upon the Knightley strain, became the property of Mr. Sartoris at $556. Charming Geneva, a rich roan seven-months-old heifer, of the Walnut family, is Lord Penrhyn's at $656 The Duke of Manchester purchased Charming Knightley, another Walnut, ten months old, for $971 ; Mr. Blundell took Knightley 5th, a three-year-old heifer of the same Fawsley family, giving $604 for her ; and Kentish Nonsuch, a red yearling, was sold to Mr. Wilson for $915.

Sale of the Linwood Herd.

The draft sale of the Linwood Herd of Mr. J. H. Kissinger, was held June 3rd, at the fair grounds Louisiana, Mo., drawing a good attendance from the State of Missouri—Illinois, Iowa and Kansas being pretty well represented. The sale, says the *Country Gentleman*, was conducted by Col Judy, and although a fair average was obtained, yet the colonel finds it a little hard as an educator of the farmers of Missouri The stock bore evidence of good keep. Everything passed off pleasantly, fairly and squarely.

Cows and Heifers.

Belle of Martinsburg, 18 months, G W. Rust, Chicago	$5[illegible]0
Belle of St Louis, [illegible] years, J. H S[illegible]ars Tallula, Ill	300
Prairie Blossom, 5 years, Edw [illegible] Springfield Ill	1,[illegible]
Belina 6th, G. W. Dawson, Plattsburgh Mo	4[illegible]
Julia Clay, 4 years, G. W. Dawson	300
Julia Blair [illegible] G W D[illegible]	[illegible]
Grandeur, 2 years Wm Bass Ashland, Mo	2[illegible]
Belle Sheridan, 4 years, G W Rust	2[illegible]
Primula Imp., J. E. Stonebreaker, Prairieville Mo	[illegible]
Iris G W D[illegible]	3[illegible]
Daisy 4th J. H. P[illegible] & Son [illegible] Ill	[illegible]
Ina, J. E. Griffith, Calumet Mo	440
Cornelia, 5 years, G. W. Rust	35[illegible]
Kitty 6 months, T M Taylor, Decatur Ill	[illegible]50
Constance, 2 years, J. H. Pickrell, Harristown, Ill	500
Cornelia, J H. Potts & Son	[illegible]
Queen Charlotte 4th, J. H Potts & Son	[illegible]
do do 7th, J. A. Guthrie, Guthrie, Mo	[illegible]
do do 8th [illegible] Mo	3[illegible]6
do do 12th J. H. Potts & Son	300
do. do 18th Maj. Ward Kansas City	[illegible]
do. do. 11th, J. H. Potts & Son	[illegible]
do do 14th, T. M. Taylor	250
Bounty [illegible]	[illegible]
Ellen McCue, S Steinmetz, Glasgow, Mo	2[illegible]0
Bella 13th, J. H. Pickrell	1,675
Nettie Pierce, Maj. Ward	575
Florentia 21st, Wm Bass	255
Caroline [illegible] T M Taylor	575
Verbena 2nd S Steinmetz	[illegible]
Nettie Pierce's heifer calf, G. W. Rust	225

Bulls and Bull Calves

Starlight, J H Spears	385
Airdrie Duke of Linwood J H Pickrell	340
Major Pritchett M. B White	[illegible]
Maj. W[illegible], O. Steinmetz	85
Duke of Linwood, T M. Taylor	500
Amos Ladd Jas Bridgeford [illegible]	285
Red Boy, T G Jameson [illegible]	160
Procurator, S. S. Tipton, Mineral Point Kansas	195
Princeton, Sections & Dustin, Summer Hill, Mo	410

Summary.

31 cows and heifers—average, $170 89		Total $14,595
9 bulls and b calves, do. 268 33		do. 2,415
40 average	$426 25	Total $17,010

Sale of Messrs. Meredith & Son's Oakland Herd.

This sale came off at Cambridge city, Indiana, May 22nd, and was well attended :—

COWS AND HEIFERS.

Joan of Arc Avery & Murphy, Detroit, Mich	$2,000
Imp. Royal Duchess 2d, T. C Jones and G. J. Hagerty, Ohio	2,000
Forest Lady, J. S. Long, Monroe, Iowa	1,000
Rosa Bonheur, A. Davis, New-Castle, Ind	140
[illegible], J S. Long	510
White Rose Wm Baur, Metamora, Ind	250
[illegible]nnie 2d J S Long	510
[illegible]nnie Lysle, J S. Long	6[illegible]0
[illegible]nnie, W S T. Morton	
First Louan of Oakland, J S. Long	7[illegible]
Second Louan of Oakland, Jas. McKeagan, Yates City, Ill.	7[illegible]
[illegible]lelora 2d J S Long	6[illegible]
[illegible]ella Walter, B. Claypool, Connorsville, Ind	1[illegible]
[illegible]llforde, J S Long	1,[illegible]0
[illegible]ressida J McKeagan	3[illegible]0
[illegible] Wilson J S Long	5[illegible]
Oxford Belle, J. S Long	4[illegible]0
Valley Maid, J. S. Long	4[illegible]
[illegible] Airdrie, J. S Long	1,1[illegible]5
[illegible] of Thornhill W R Duncan, Towanda Ill	1,[illegible]
[illegible] Lesley 2d, J S Long	5[illegible]
Kate Washington, J S. Long	7[illegible]
[illegible] Lee D. Gardner, Champaign	1[illegible]
Oakland Queen, J S. Long	[illegible]
[illegible] Ann 1st J N Conklin, Cambridge, Ind	1[illegible]
[illegible]arland, J. S. Long	600
[illegible], G. S. Woodyard, Munster, Ind.	1[illegible]
[illegible]ket, D Gardner	105
[illegible], Wm Crum, Anderson, Ind	[illegible]
[illegible] Wabash Ind	[illegible]
Dora, J. Jackson	310
[illegible] Champaign, Ill	2[illegible]
Emmy, J S Long	6[illegible]0
[illegible]la, J. Jackson	2[illegible]0
[illegible]llen, J. Jackson	17
Melissa, Avery & Murphy	3[illegible]0

BULLS.

Prince of Airdrie 15[illegible]09, Wm. Raymond, New Castle, Ind	$200
Oakland Fancy 17857 H B Cole, Morristown, Ind	280
Cypria's Heir 16591, Wm Hanson, Connersville Ind	
[illegible]esley Duke 1[illegible], Wm Crum, Andersonville, Ind	18[illegible]
[illegible] Cherub, E. S Jones, Indianapolis, Ind	200
[illegible] Gregor 17[illegible], A. B[illegible]r, La Porte, Ind	2[illegible]
[illegible]nny's Heir J S Walker New Castle, Ind	[illegible]
[illegible]man's Cherub 17298, C. Hook Xenia, O	4[illegible]
[illegible] 15[illegible], Jas. McKeagan	200
[illegible]s Cherub 1741[illegible], Alex Charles, Dixon, Ill.	4[illegible]
Oxford Heir, A Masstill, Milton, Ind	105
Forest Heir C B Jackson Centreville Ind	—
[illegible]armer 17680, E Martin, Woodstock, Ohio	2[illegible]
Royal Oakland	110

SUMMARY.

[Excepting one cow and two bulls, of which the price is not stated.]

35 cows and heifers—average, $540 54		Total, $18[illegible]0
12 bulls and b. calves, do 239 17		do 2,870
47 head	average $163 62	Total $2[illegible],790

Short-horn Sale at Tallula, Illinois.

The sale of Messrs. J. H. Spears & Son's herd at Tallula, May 27th, elicited active competition, resulting as below :

COWS AND HEIFERS.

Duchess of Sutherland, Gen. C. E. Lippincott, Springfield, Ill	$1600
Mazurka 20th, Gen. Meredith & Sons, Cambridge City Ind	1000
Victoria 5th, G. L. Burrus, Carrolton, Ill.	60[illegible]
[illegible] Lorne, George Hedges, Petersburg, Ill.	450
Countess of Warwick, A Charles, Dixon, Ill.	405
Lucy 18th, do do	490
Lucy Muscatine do. do.	450
[illegible], S. Meredith & Son	625
Forest Queen, G L Burrus	74[illegible]
Rosabelle and calf, M. L. Devin, Des Moines, Ia.	600
Rosabelle 2d A J Dunlap Galesburg Ill	62[illegible]
Illustrious 5th, J. N. Brown & Son's Berlin, Ill.	800
[illegible] 6th, do do.	400
Blanche 7th B H Campbell, Batavia Ill	6[illegible]
Pride of Forest Hill, Joseph Lowands, Table Grove, Ill.	750
Cambridge 14th, William Black, Carrolton, Ill	100[illegible]
Sanspareil 20th, J. N. Brown's Sons	1100
Sanspareil 23d, do do.	1100
Lady Mary George L. Burrus	51[illegible]
Vista, Alex. Charles	700
Rosette 4th, J H. Kissinger, Clarksville, Mo.	1025
Sanspareil 10th, Gen C E Lippincott	600
Modesty Joseph Strawn Jacksonville, Ill.	37[illegible]
Sanspareil 25th Edward Iles Springfield, Ill	79
Duchess of York 12th, Gen. Lippincott	800
Cambridge 15th, S. K. Reggin, Petersburg, Ill.	610
Gloster's Beauty, do. do.	420
Duchess of York 10th, do. do	930
Duchess of York 9th, Alex Charles	625
Lydia 2d, Walter Reid, Tallula, Ill.	280
Forest Maid, W A Covington, Tallula, Illinois	425
Forest Maid David Grant, Petersburg	1[illegible]6
Laura Lee, M. L Devin	210

BULLS AND BULL CALVES.

Cherub 2d, Gen C E Lippencott	$5500
Duchess of Sutherland's bull calf, S K. Reggin,	1050
Col Reid, A. G. Vance, Petersburg, Ill.	385
Capt Sandy A M Lockridge Iowa	200
Maj Hill, T. H. Prime, Oskaloosa, Iowa	1100
Cherub 3d, Edward Iles	625
7th Duke of Forest Hill, A B. Lockman Draperville, Ill.	—
8th Duke of Forest Hill, Samuel Dysart, Franklin Grove, Ill.	305
10th Duke of Forest Hill, B. B. Hopkins, Greigsville, Ill	305
Royal Muscatoon, John Primty, Ashland, Ill	185

SUMMARY.

33 cows and heifers, average, $[illegible] 18		Total $21,885
9 bulls and bull calves, do. 1106 10.		" 9,955
42 head	average $755 10	Total $31,840

Franklin Grove Sale.

The sale of Short-horns by Mr. W. H. Hausen, Franklin Grove, Ill., June 3rd, shows good figures, like most of its predecessors :—

Cows and Heifers.

Alicia Eaton, E. Adrian, Compton, Ill.	$380
Minnie Eaton, J C. Lahman, Franklin Grove	600
Belle of Lee W A Chambers, Rochelle	300
Mollie 3d, M. Seacke, Farren	190
Red Lucy, L. Adrian	430
Filigree, Hawkes & Moore, Polo	380
Dewdrop J A Patterson, Rockford	140
Filigree's Beauty, J C Lahman	610
[illegible] of Franklin, D. Becher, Mosquette, Iowa	405
Flora Bell, Hawks & Moore, Polo	305
Lady of Franklin, A H Dean	3[illegible]0
Star of Hope, Mr Redid	375
Maggie Spears, M. Seacke	410
Queen of Bellevlew, A. J. Rogers	395
Attraction 4th, J C Lahman	450
Kate Johnston J A Patterson, Rock Falls	175
Ida Jones, M. Hunt, Ashton	600

Bulls and Bull Calves.

Mozart, J L. Elwood, DeKalb	305
Baron of Franklin H. Sinkers, Franklin Grove	310
Franklin Duke 2d, Wm. Watson, Dekalb	250
do 4th, W H Roe, Creston	195
do 5th, M. Crabtree, Carroll Co	235
do 6th, L. Boyd, do	150
do 7th, H Buck, Polo	135
Shabona, P. V. Quinhatt, Shabona	160

Summary.

17 cows and heifers, average, $382 06		Total, $6,495
8 bulls and b. calves, do 217 50		do 1,740
25 head	average, $329 40	Total, $8,235

The Decatur Sale.

The joint sale at Decatur passed off very successfully Messrs. B. Z. & T. M. Taylor sold 13 females for $10,955, an average of $843,—among them were six Louans, which brought $8,395, an average of $1,399 Fifteen bulls sold by the same gentlemen brought $2,018, an average of $183, and their total average on 24 animals was $541.

The lots contributed by Mrs. A. P. Pickrell and Mr. Geo. Elliott were, as the fashion goes, of undesirable pedigrees, many of them running to the woods after a few courses, and they sold low, seventeen females sold by Mrs. Pickrell bringing $5,450, an average of $314, and six bulls $1,750, an average of $291 ; her 23 animals making $7,200, an average of $313 Twenty-three cows sold by Mr. Elliot made $5,725, an average of $249 ; and eight bulls, $1,265, an average of $158 ; his thirty-one animals making $6,990, an average of $225.—*L. S. Journal.*

Mr. J. R. Craig, of Edmonton, has disposed of all the animals purchased by him at the recent sales, to B B. Groom, Winchester, Ky.

Mr. R J Stanton, we understand, has sold the "Birch Grove Farm," together with all his remaining Short-horns, and intends going to England by and by for stock with which to start a new herd.

Private Sales.—Mr. John Miller, Thistle Ha', has sold the short-horn bull Lord Strathallan to Mr. Lockridge, Greencastle, Indiana, for $2,500 ; and Mr. John Bell, Atha, the short-horn bull "The Doctor" to the Messrs. Day, Utica, for the same figure.

Ayrshires.—At the annual sale recently held at Lanark, Scotland, the general run of prices was—for cows, $75 to $150, heifers, $70 to $155 ; bulls, $75 to $125. The first prize cow sold for $325. Consignments were present from the herds of Messrs Tweedie, Muir, Alston, Murray, Todd, Logan, Carmichael, Torrance, and other leading Scottish breeders.

Jerseys are looking up. At a sale from the Hargrave herd, the property of Mr. W. H. Gilbey, Essex, England, lately, 22 cows and heifers brought the sum of $5,266, being an average of about $240 a head. The highest price was $525 for Viegirl, a two-year old heifer by Banboy, out of Victoria, sold to Mr. R. N. Byass. Four Jersey heifers belonging to the Earl of Rosslyn were afterwards sold for $520.

Veterinary Department.

Retention of the Placenta.

(*To the Editor of the* CANADA FARMER.)

SIR :—A valuable four-year-old cow of mine recently gave birth to her second calf—a strong healthy little fellow—but afterwards her placenta or after-birth went back, and she has shown no symptoms of casting it off since. The only cause I can assign for the trouble is, that when removing the calf to a separate apartment, the cow became restive, broke her tie-cham, and getting outside, helped herself to a copious draught of cold water.

If you can inform me through the columns of the CANADA FARMER what the proper treatment is in cases of this kind, you will much oblige

A NEW SUBSCRIBER.

[The placenta, or after-birth, when retained longer than from four to six days, should be carefully removed with the hand. A drink of cold water would not of itself cause the retention of this membrane. —ED. C. F.]

Sprain of the Pastern Joint.

(*To the Editor of the* CANADA FARMER.)

SIR :—I have a valuable mare that last winter got sprained in the pastern joint. It was so slight as to be scarcely noticeable for a time, but the animal is now quite lame. I consulted different parties, among others a veterinary surgeon, who pronounced it a case of contracted hoof, and who magnanimously offered for $7.50 to cut the poor beast's foot into shreds. I am quite satisfied it is not a case of contracted hoof, but what it is, or what course of treatment to adopt, I know not, and any information or advice you can give will be thankfully received.—I am, &c., A. T.

[Sprain of the pastern joint is best treated by giving the animal perfect rest, and bathing the part several times a day with warm water. The joint should be covered after each application with a nicely fitting flannel bandage. After continuing the fomentations for a week or ten days, it may be advisable to use a blister, in which case the common cantharidine ointment may be used.—ED. C F.]

Diseases of the Horse's Eye.

Conjunctivites, or simple ophthalmia, is a common disease amongst Canadian horses. The term *conjunctiva* explains its pathology, as it consists in inflammation of the superficial structures of the eye. This disease may proceed from many causes, as direct injury to the eye from the lash of a whip, or from the introduction of some foreign body, as a hay-seed or chaff pickle. It occasionally results from continued exposure to extreme cold or heat, and from the effects of foul air; and we have very often noticed well marked cases in horses that were stabled in the same building with a large number of cows, where the air was very impure and vitiated. Simple ophthalmia is a complaint that is very easily recognised. There may be partial or complete closure of the eyelids, and a copious secretion of tears, which flow freely down the cheek; the upper eyelid is sometimes very much swollen and partially everted, and sudden exposure to light irritates the eye; the conjunctiva is reddened, and these symptoms are speedily followed by more or less opacity of the cornea (which appears as a white film), the result of an exudation between the layers of that transparent membrane. When the cornea is the immediate seat of the injury, the opacity radiates from the centre towards the circumference. If we attempt to evert the eyelid, the *membrana nictitans* is moved quickly over the eye ball. In simple ophthalmia, unless the case is an extreme one, there are seldom severe constitutional symptoms shown.

In the treatment of this disease, it is always advisable to make, first of all, a careful examination in order to discover, if possible, the exciting cause; for if it is due to the action of some foreign body lodged in the eye, the irritant must be carefully removed, which may usually be accomplished with ease by the aid of the forceps, or with a feather. When once the source of irritation is removed, the inflammatory action very soon subsides. When the living membrane of the eyelid is *much* swollen, it may be advisable to scarify gently, and it has also been found beneficial in some cases to bleed from the small vein immediately under the eye. Fomentations of tepid water are also serviceable, and if the pain is severe, an anodyne lotion should be applied, as laudanum two ounces, acetate of lead one drachm, and six or eight ounces of water. Except in very mild cases, the patient should be placed in a darkened box, fed sparingly on easily digested food, and a moderate dose of physic administered. If there appears to be a tendency to adhesion of the iris to the lens, it will be necessary to use the extract of belladonna. When the inflammation ceases, the opacity of the cornea is soon removed by absorption, which may be hastened by the application of a mild collyrium, as ten grains of iodide of potassium dissolved in one ounce of water, applied by means of a small feather or a camel hair brush. The eye is sometimes severely injured by the incautious use of caustics and other irritants, as powdered glass (a favorite remedy with some empirics in Canada) blown into the eye with the view of cutting off the film When the cornea has been severely injured, it may be occasionally necessary to touch the parts with a lotion of nitrate of silver—about twenty grains to an ounce of water—or it may even be necessary to use the solid caustic, but in the generality of cases the milder application will be sufficient.

Knee Sprung.

Nearly everybody knows what is meant by a horse being sprung in the knees. For the information of those who are curious to know how this condition is produced, I will explain one of its causes.

The bones of the foot and pasterns of the horse do not stand perpendicularly above each other, but slope backward, a considerable portion of the animal's weight resting on the tendons that pass down the back of the leg; and hence the greater the slope the more strain the tendons have to bear. If we put a horse to stand with his head up hill, more exertion is needed to sustain himself than if standing on the level. The reason is, that the bones of the foot and pastern are thereby placed more obliquely, and more of his weight is thrown upon the tendons and muscles, and thus a wearied horse, if left to himself, always feeds with his head down hill. But we often add to the slope of the foot and pastern, the same, by adding to the length of the hoof or unnecessarily lowering the heels; as by placing the horse's head up hill and with greater permanency of effects, as we leave him no power to relieve himself. Often the two conditions are conjoined, the toes are injuriously long, and the horse is confined nine-tenths of his time in a sloping stall. Here the muscular exertion of sustaining his weight soon becomes irksome. He shifts from one foot to the other, but finds it only a temporary relief. The muscles connected with the tendons that pass down the back part of the leg to the foot, soon begin to relax, till the weight falls upon the ligamentous straps, behind and below the knee. Then the bones of the foot and pastern become still more sloping, and to sustain his body perpendicularly above his feet, and still more to relax the muscles, the knee bulges out in front to a line with the projecting toe. This, at first, occurs only now and then, when the horse is wearied or forgetful, his pasterns becoming natural and proper when roused up. By and by, however, it becomes a habit, and the causes being permanent and constant in their action, the effects soon become the same, and we have the horse for life sprung in the knee.

Many a valuable horse, tottering on the brink of this condition, has been saved and brought back to usefulness by having his feet put in proper shape and putting on them high-heeled shoes, and letting the horse run at grass or stand in a loose box, while others on whom the torture of long toes and sloping stalls was preserved will have become permanently useless.—*Western Farm Journal.*

Blood Diseases.

The proper management of a herd or flock, in which splenic apoplexy or any other form of blood disease has broken out is always a matter of anxious consideration. In most instances the calamity comes quite unexpectedly, and at first its true character may not even be suspected. A particularly promising ox, or one of the best sheep in the flock, is found dead in the pasture, and the attendant is positive on the point of the animal's perfect health to all appearance a few hours before its death. The owner may perhaps be inclined to blame the servant for want of attention, but no particular notice is taken of the event, the carcase of the animal is disposed of in some way, and the death is ascribed to any cause but the right one. A few days pass and then another mysterious death occurs; perhaps more than one. The veterinary surgeon of the district is called on to make a post-mortem examination, and discovers a morbid condition of the spleen or milt, which is distended with blood to twice or thrice its natural size, pulpy, and dark, nearly black in color. Other less prominent signs of disease are present; the blood is generally dark colored; the veins are remarkably full, patches of congestion appear here and there; the intestines contain a quantity of chocolate-colored fluid, and sometimes blood in a state of partial decomposition—spoiled blood, as it is commonly called.

Sufficient to account for death is always to be detected at the beginning of the examination, hence the investigation usually ceases long before it is completed. A more minute inspection would lead to the discovery of important changes in the nervous centres, and also in the structure of the blood, which, indeed, is the part of the organism which is chiefly concerned. Attention now being directed to the fact of the existence of splenic apoplexy among the stock on the farm, it is most likely that the herdsmen or shepherd, having his powers of observation sharpened by apprehension, will distinguish certain signs which indicate the attack of the disease. An animal which was in the morning feeding well with the rest, will be observed to cease eating, and perhaps separate itself from the others and seek an obscure corner of the feeding-ground; or it may be seen to tremble, void a little blood from the rectum or bladder, or both, lie down, and in a few minutes roll over and die.

Something is clearly required to be done in such an emergency beyond the mere attempt, usually fruitless, to cure the sick animals. Indeed, several things have to be done at once; the cause of the disease must be found out and removed, or the animals removed from its influence. The exact state of the flock or herd in respect of the spread of the affection must be ascertained without delay. Lastly, the employment of preventives must be actively proceeded with for the protection of the animals which have yet escaped the malady, but are nevertheless under the influence of the causes which give rise to it. All these matters require the attention of a skilled person. First, the thermometer and microscope will enable the inquirer to determine how many animals are tainted with the disease. A rise in the internal temperature precedes the development of other symptoms of the attack, and the presence of bacteria, and bacteridea, in the blood is even more characteristic of the morbid state of that fluid, which ultimately causes the death of the animal.

Obviously if the investigation results in the detection of one of the direct causes of disease to which we have previously referred, it is necessary to take immediate measures to prevent the further operation of the agency, whether it be unwholesome atmosphere, impure water, or bad food. Failing, however, to discover anything objectionable in these particulars, the only course which can be taken lies in the direction of change of management. The habits of the animals must be as completely varied as circumstances will allow; change of feeding ground is most important, or if this be impossible, the healthy animals must be removed from one pasture to another as often as can be arranged. At night they should be placed under cover and allowed a little dry food. When the morning sun has dissipated some portion of the night dews, it will be time enough to return the animals to the grass land.

Those animals of the herd or flock which have been selected from the rest by the aid of the microscope and thermometer must be placed under special preventive treatment. In addition to the measures which have been recommended for the healthy animals, they should have daily a certain portion of some antiseptic medicine. Hyposulphite of soda is the most serviceable and safe agent which can be used, and it may be given in doses of two ounces to cattle, a half an ounce to a sheep, once or twice a day in the food or water for some days consecutively, and afterwards on alternate days.—*Agricultural Gazette.*

Breeder and Grazier.

Dangerous Stock Feeding.

I wonder how many cattle and horses and sheep are destroyed annually by mistakes in feeding? I know of so many, even in this limited neighborhood, that the total must be alarming. Mr. So-and-so, wishing to get his horse "well up" for the show-yard, gives him wheat meal, so one morning he is found dead. Another Mr. —— loses half a score of valuable fat bullocks and some horses from nearly the same cause. The food is too nitrogenous and glutinous. The same remark applies in a degree to bean-meal. Horses getting at a heap of dressed wheat are almost sure to die. If beans and wheat were given in the same condition in which they grew —I mean with the same proportion of straw, pod and chaff—there would be no danger; for who ever saw a horse injured at harvest time by helping himself to wheat with its straw and chaff? Animals will seldom go wrong if they have plenty of chaff, pollard, &c., with their rich diet. Why are oats so safe for feeding compared with beans? Because they have a thick, chaffy jacket, not like the rich bean or dressed wheat. An old farmer, with a long or clear head, mixed his bean-meal with linseed oil made into balls. No fear of wind or blowing in such a case. Whenever I am short of green food in July and August, when the beans are full podded, I pass them, stems and all, through a chaff-cutter, and they make the best of food for all farm animals. In winter, the bean stalks, as hard as sticks, are passed through the chaff-cutter, afterwards moistened with hot water, and thus become soft and most acceptable food. No bean straw should ever go under foot. See its analysis, second only to hay. Italian rye grass, forced to rapid growth by guano, with its excess of ammonia, would kill our lambs, and even some of the older sheep; not so when manured abundantly with animal excrement. The same remark applies in a degree to ammonia-forced roots. Depend upon it, a mixture of straw chaff with very rich food is a profitable safeguard. So many cattle are lost by flatulence (distention or blowing), that my stockman and I often talk over the matter, especially as we never lose one from that cause; and he is of opinion with myself that our freedom from these losses arises from a pulping of the roots and their admixture with dry and fine cut hay and straw chaff, and with bean meal, bran, malt combs (culms), and cake. The food thus lays compactly in the stomach, but yet is free to receive the permeation of the gastric juices. It is easy to imagine that a mass of pulpy, adhesive, glutinous wheat or bean meal is by no means readily permeable. We know, by the old-fashioned use of the choke-rope, that some animals are apt to bolt their food in masses. I am a firm believer that the mechanical or physical condition of fine-cut straw in the stomach has much to do with digestion and health, as well as by its chemical composition. After 30 years of close observation and practice, both I and my men have come to a decided conviction that the turning out and roaming at large is dangerous and unprofitable practice, and that it pays better to bring the food to the cattle than the cattle to the food, and that in the case of the sheep close folding and a removal of the fold (iron hurdles on wheels), every 12 hours is the truest and most profitable practice. The waste of food and loss of stock by the roaming at large plan is something fearful, besides the animals do not progress so well. J. J. MECHI.

Tiptree, April, 1874.

The Management of Lambs.

The economical management of lambs is one of the difficulties which beset the stock farmer. Whilst land and stock were about half their present value, whilst sheep were fatted out at two or three years old instead of at one year, their management was comparatively simple and easy. On the ploughed land few sheep were kept, penning was seldom adopted, the value of these animated manure carts was not recognised, pastures were not so heavily stocked with either sheep or cattle, but such old-fashioned practice has been superseded, the acreage stocking has been greatly more than doubled, but the extra mouths kept have brought more risks and casualties, and taught more emphatically that sheep require constant fresh food, and never thrive on food stained with the droppings of their fellows.

Lambs are especially sensitive of any errors of management. A pinch, perhaps at the time unsuspected, will sometimes weeks after cause them to fall off, pine, purge, and die. A few days stinting at the time of weaning will perhaps tell its sad tale in a score of deaths between Michaelmas and Christmas. A week's dry weather and deprivation of water several months later will tuck up many lambs and destroy them with wasting bloodlessness and dried shrivelled livers.

Lambs on good keep, especially on rich artificial grasses, have recently suffered from the sharp morning frosts. The frozen grass nibbled wet in the chill early dawn has set up gastric irritation; many lambs are in consequence scouring, whilst not a few have died from the bowels becoming inflamed. To prevent such losses, the ewes and lambs should lie at night on comparatively bare dry pasture, or be penned on roots or on fallow, getting some cut clover or vetches in their racks, and transferred to their better pasture towards nine or ten o'clock when it is perfectly dry. Besides preventing the evil effects of frosted food, such practice will further prove advantageous, especially to lambs, which never do so well as when they have frequent changes of food. On grass land they should be moved once a week to pastures on which, if possible, no sheep have been kept for ten days. It is a mistake, however, to suppose that sheep should have long luxuriant pastures; on the contrary, it has been aptly said that two sheep may starve where three will feed; and again, that although a bullock should have grass seven days old, a sheep will do better with that twenty-four hours old; sheep notably prefer a short close bite provided it is fresh and unstained. Hurdled on clover, rye, or vetches, lambs should be allowed to run ahead of the ewes, and pick the best and freshest of the food; and where they are to be fed out at twelve or fifteen months, it will answer well to allow them two or three ounces of linseed cake, or of a mixture of oats, peas, and malt dust, or other such concentrated food. Regular steady thriving is thus ensured; scouring and other ailments are warded off; weaning, which should occur nine or ten weeks after birth, is effected without trouble or risk, whilst besides a considerably heavier stock can thus be satisfactorily kept.—*N. B. Agriculturist.*

Cheap Rabbitry.

Dr. Pond, of Cassadaga, N.Y., gives the following directions in the *Chautauqua Farmer*, for constructing rabbit hutches so cheaply as to be within the means of any boy:—

Rabbits have been and are kept in common dry goods boxes, with the cover fastened on by leather hinges, and a few holes bored around the side for ventilation. In this primitive manner most excellent success has been attained. Of course in such quarters cleanliness is indispensable. The box must be cleaned out and fresh litter given every day, or at least every other day.

Another simple arrangement is a shoe box. This is usually about 3 to 3½ feet long, 15 to 18 inches deep, and about 12 inches broad. This is placed on the side on supports, or fastened against the wall with the door or lid hung from the upper side, thus lifting up. The door may be of wire cloth, lath, or simply the lid of the box with a few holes bored in it, and hung by iron hinges or strips of leather. One end of this box may be set off by a partition for a nesting room; this need not be over nine inches wide. On this point I differ with most other writers on this subject; they advocate a nesting-box of twelve to fifteen inches in width and the depth of the hutch, whether one or two feet from front to rear. My experience is with these large nesting boxes, the young rabbits, as soon as they are able to crawl, will often get out of the nest and get chilled, and are unable to get back again. Having lost a number of litters in this way, I have reduced the size of these boxes to ten inches diameter for Lops and Belgians, and to nine inches for the smaller varieties, and also when the hutch is deep, I place a semi-partition, about two and one-half or three inches high, across the nesting department, about one foot from the front of the hutch—entrance to the apartment by the door being by an opening in the back part of a hutch through a hole six inches wide and eight inches high. Hutches of this kind may be placed in tiers two or three or four high.

Another and still simpler mode of keeping rabbits is in an unoccupied room in any outbuilding. This can be divided into apartments by boards, the partition to be carried up to a height of three and one-half or four feet. The apartments may be of such size and shape as suits the fancy of the amateur. In one corner of the pen put a box, say about ten by fifteen inches, with a round hole six or seven inches in diameter cut in one end; hinge the cover and fasten it down by a simple hook or button, so as to afford better opportunities to examine the young. Care must be taken to exclude cats and rats from the room. For young stock I especially recommend keeping them in this last manner. My pens are four in number, about 5 feet wide by 10 feet long, and in one of these I have had as many as 35 rabbits at one time, varying from six weeks to four months old. They have ample room to exercise, and seem to thrive much better than when in more confined quarters, even in small numbers.

Garget.

This disease, so troublesome to dairymen, prevails at this season with greater frequency than at any other part of the year. The sudden and extreme change of secretions after the birth of the calf, the great activity of the lacteal glands, tend to produce a feverish condition or a tendency to fever in those organs. A chill by drinking cold water, exposure to cold, storms, draughts of air, cold and wet yards or stables, or other causes, and local injuries to the udder, are very sure to result in congestion more or less severe, which, if not speedily removed, ends in an abscess, accompanied by swelling of one or more quarters of the udder, secretions of blood or matter, or both in the milk, and the discharge of quantities of matter, attended by extreme pain and loss of condition. It occurs more rarely at other seasons from similar causes. If the disease is suffered to run its course, the vitality of the affected gland is impaired or destroyed. That quarter of the udder sometimes perishes and withers away.

It is well for the dairyman to take a little pains in the way of prevention by taking the chill off the water, feeding relaxing food, bran mashes and roots, and guarding against all kinds of exposure for a couple of weeks. It is easier than to cure the disease. The efficiency of remedies depends on their timely application. A dose of physic, say two pounds of glauber salts, fed with meal or dissolved and poured down from a bottle, with frequent bathing with warm water, with careful wiping and thorough manipulation of the part, and milking, if seasonably resorted to and the cow is well protected, will usually effect a cure. When the case is allowed to run a few days until the udder is caked hard, hot and throbbing with pain, the milk dried up, extreme care and fidelity alone will save the udder.—*Rural and Farmer.*

The Brittany Cattle.

The following is a description of these cattle as seen at a sale recently held in Boston. We quote from the *Transcript*:—

"In aspect they are pleasing. The color is black and white, mixed in masses, as in the Dutch, with a preponderance of the former. In size they resemble the Kerry, but they are of a finer make. The face, horns and legs are as fine as those of the Jerseys. The front line of the face is straighter, however, and this, with a little thinness of the neck, suggests the Ayrshire. The diminutive size of the creatures, some of them standing about thirty two inches high, appears when we note that they are below the waistcoat buttons of the person examining them, and that the lower leg can be more than spanned with the thumb and finger. We have here all the attractiveness and fascination of littleness without any of that shaggy coarseness generally coupled with it in the pony and the Kerry cow. This cow, as to shape and delicacy of mould, seems like a miniature Jersey, with the fine limb of the antelope and the fine eye of the gazelle. It seemed to be conceded that they were very light feeders and greater milkers in proportion to the cost of keep than any of the popular strains. The milk seemed rich, if not of the very richest, and some of them were sold as giving from eight to ten quarts of it, and capable of living well wherever a goat could, and as being uniformly gentle."

Cattle Feeding.

I want to say something to your readers that I think they need to note, at least some of them. As I travel around the country buying cattle, I see hardly any number one cattle, except, may be, some few kept for show. Of course there are some good cattle, but I mean they are generally poor. Now your advice to improve the stock by getting better blood is all well enough. "Blood will tell, but people generally lose sight of another thing when they try to get blood. Too many try to get along with plenty of straw well sprinkled with salt water. I have seen cattle that showed marks of Durham blood, may be half, some of them that were very inferior. A man that wants a good steer when it is four years old,

must start right when it is a calf. If you want to keep the handsome calf shape, give it all the milk it can suck, and, when it is weaned, feed it grain. Keep it growing; but that is not enough. Keep it smooth, too. When it begins to shamble around and draw up its back, give it grain. The first and second winters are the worst. In the summer it pays to feed corn, while the yearlings are on grass. If farmers would attend to this, and forget all their old foggy notions about skim milk and roughness for young cattle, they would turn out better steers.—*Cor. Brain and Muscle.*

IF a lamb gets chilled, wrap it in a warm blanket; or, in extreme cases, put the lamb in a tub of warm water. Lambs apparently dead have been restored in this way.

A PAIL of water with a pint of corn or oatmeal stirred in it is a capital thing for a tired horse. It will enable him to work an hour or two longer in an emergency.

A GENTLEMAN visiting an Irishman, noticed a monstrous pig strutting about the house, and asked how they got such a brute up those two stairs. "May it plaze yer honor," said Paddy, "it was niver down to be tuk up."

STRETCHES IN SHEEP.—John R. Chapman, Madison, Co., N. Y., says the best remedy he knows is a *pint* of warm lard. Stretches, he says, are produced from eating old, dry hay or a want of drinking water or both combined.

MENTION is made of an inveterate cribber which was effectually cured of the reprehensible habit by simply "nailing strips of sheep skin, wool side up, on the edges of the manger and in every place about the stall where the horse could get hold with his teeth.

SHEEP SHOW AND SHEARING IN NEW YORK.—The N. Y. state show of sheep and sheep shearing, at Canandaigua, the first week in May, is pronounced successful—the largest ever held. The heaviest fleece was 32 pounds for a ram's fleece 366 days old; 19½ pounds for a ewe's fleece 420 days old.

TEXAS, the great cattle country, is not as some think a country of long-horned cattle. Rarely is one of this kind seen. The long horn has given place to the medium sized horn, and now we are told that thoroughbred short-horns are being imported into the state in great numbers.

STOCK IN KANSAS.—Complete returns from every county to the State Board of Agriculture, show the condition of stock on the first of May to be below the average. Cattle are reported to be eleven per cent. thinner, horses and mules five, sheep one, poultry eight, and swine fourteen per cent. poorer. The general complaint has been want of sufficient and proper feed.

A REGULAR wool dealer, who thoroughly understands the subject, says that the proper way to tie up a fleece of wool is to lay the fleece on the table, turn in the head and tail, and turn in the flank, and roll it up, commencing at the tail end, tying it with two strings to keep the roll in place, and then with one string across the ends. This is sufficient. A fleece thus tied is light, easily handled and examined, and can be felt all through. It does not require a thorough examination to determine whether there is anything in it that is not wool.

A YOUNG MOTHER.—At the Inverness cattle market on Friday we observed, says the *Inverness Advertiser*, what to us and to many others was an unusual exhibition, viz., that of a young cross quey, not yet ten months old, apparently near calving. This curiosity belongs to Mr. Graham, Antfield, who informed us that some years ago he had another of similar age in the same condition. The animal at Friday's market appeared to have abundance of milk, as on touching her teats the fluid flowed forth, whitening the grass around where she stood.

COTSWOLD SHEEP, HEAVY FLEECES, AND PROLIFIC EWES.—According to my promise, I give you the weight of wool and number of lambs from twenty breeding ewes, two yearlings and three others. The whole gave us 226 lbs. of good wool, not counting the tag locks. This is an increase of three pounds to a sheep in the same number of years, and there is room for improvement still. The 20 ewes dropped 26 lambs, of which 25 are alive and smart. One pair, the lambs of an imported ewe, weighed 42 lbs. when 18 days old. The whole number of lambs that have died since Cotswolds were introduced into the flock, which was six years ago, will not exceed 5, and the number of lambs raised each year have been from 20 to 35, and they sell readily at prices ranging from five to ten dollars a piece.—*Cor. Colonial Farmer.*

The Dairy.

How they Make "Gilt-Edged" Butter in England.

As a matter of interest to many of our fine butter makers here, we copy the following from the English *Agricultural Gazette*, showing how the best butter is made in England. The washing of butter seems to be admitted to be injurious. It says:

"Fortunate is that household which has a dairy as a part of its establishment, especially now, when all housekeepers feel that milk and butter are the most difficult articles to procure always pure and good for the daily supply of the family, even though there may be every opportunity of getting produce fresh and home made. It is really seldom that we eat butter as sweet, and rich, and fine in flavor as it ought to be, and as it would be, if careful, constant attention were paid to the simplest means; but then it is imperative to use all these means; and few will believe that all are necessary; so for convenience sake, or for other reasons or other purposes, the room in the dairy is filled, and it becomes a store for many things which ought not to be there, as an experienced nose will soon detect. A close smell appears where all should be fresh as the morning air, an equal temperature being maintained to secure a greater quantity of cream rising from the milk, and to confer a better quality on both; both being scrupulously guarded from any contamination with animal or vegetable matter, often found hanging or placed in the dairy for coolness at this season—at the risk and with the reality of rendering the dairy produce less pure and good than it might be.

"The butter making must be arranged in some degree according to the quantity of cream or the number of cows' milk to be disposed of: but it is always better when made fresh from cream before it become at all sour. One ounce of saltpetre should be put in a tin before the cream is skimmed into it. The tin should hold when full 3 gallons of cream, which should be stirred twice a day until churned. This will do much to keep it in good condition. The best butter we have ever eaten was made in a large dairy where a small proportion only of the milk was set to make butter. The tins held 3 or 4 gallons, the milk being spread over a surface about 6 inches deep. When it had been standing 12 hours, the cream was skimmed—the milk in this case was added to the new milk for cheese making, not more than 1 lb. of butter per cow per week being taken from the cheese. In most or all dairies it might be easily arranged for the cream to remain on the milk only for 12 hours. Milk skimmed at these short intervals will be as sweet and good for weaning calves, for use in the house or for sale, as skimmed milk; and, thus doing, the richness and flavor of the butter are secured, for which the highest price can always be gained. The sweetness and better quality of the milk, for whatever purpose it may be afterwards used, make up for any little less butter obtained than might have been, had the cream remained as is usual on the milk 24 hours, instead of the plan thus recommended of skimming it every 12 hours. At this season there is little difficulty in getting the butter to come quickly and well, but in autumn and winter it is otherwise, and much time and loss may be saved by scalding the cream the evening before it is to be churned by placing the tin of cream in water to warm, which should gradually boil. Keep the cream in it for half an hour after the water boils very gently. Stir it very frequently, and there is a double advantage, for by this means any disagreeable flavor caused from different kinds of food eaten by the cattle is removed; and for this latter reason alone it is generally a valuable plan to scald the cream as described, for even the least experienced in making butter know that for some cause or other there are times when the butter (made as carefully as at other times when it is perfectly good) has an acrid taste. Numbers of causes, reasonable or not, are given—for instance, that it is from the cows eating the crow-foot, for this unpleasant taste in butter is just at the time when buttercups make the meadows yellow. The best thing to do to cure the unpleasant flavor in the cream is by scalding it before the butter is to be made.

"The mode of making up the butter is often a reason for its not proving good. It cannot be necessary to urge that the utmost delicate cleanliness can alone insure good butter, and instead of saying what should not be done, we will describe the plan adopted in making the best butter we have ever eaten, to which we have before alluded.

"As soon as the butter was taken out of the churn, the dairywoman (who must have a cool hand), in a cool place, gently squeezed or worked the butter, by which means the buttermilk was removed, running round the sides of the wooden vessel in which the butter was being worked, the dairywoman wiping it up as soon as it runs from the butter. No water for washing the butter was ever allowed to be used in this dairy; a very little working or squeezing is enough to make the butter dry of the buttermilk. Then spreading it over the surface of the bottom of the vessel it has been worked in, salt sufficient for the taste desired was added, and it was rolled or printed in half-pound weights for use.

"Butter that is washed always seems to be tasteless compared to that treated as described in this large dairy. It may seem a little less trouble to wash, and wash, and wash it, and so remove the butter milk, but in so doing the flavor and richness, we believe, are very much diminished also, and the keeping properties seem less also; and we would urge on those who have never tried this plan to do so, and judge for themselves if they do not find the quality of good butter thereby improved."

Opening of Cheese Factories.

The following returns are in addition to those published in our last issue.

WHITE CLOVER FACTORY commenced operations May 5, with about 400 cows; expect during the season to have the milk of 500 cows. Last year began making May 5, and had during the season the milk of 400 cows, from which 94,909 lbs. of cheese were made. Parish & Chamberlain, props., Morrisburg.

BROOKE commenced operations May 11, with 120 cows; expect during the season to have the milk of 450 cows. Last year began making May 10, and had during the season the milk of 250 cows, from which 40 tons cheese were made. Joint Stock Company, Watford.

GORE OF DOWNIE commenced operations May 18, with 350 cows; expect during the season to have the milk of 600 cows. Last year began making May 19, and had during the season the milk of 450 cows, from which 68,876 lbs. of cheese were made. Hugh Dempsey, proprietor, Stratford.

CULLODEN commenced operations April 18, with 225 cows; expect during the season to have the milk of 800 cows. Last year began making April 17, and had during the season the milk of 700 cows, from which 236,436 lbs. of cheese were made. Culloden Cheese Manufacturing Co., Culloden.

QUEEN commenced operations May 8, with 200 cows; expect during the season to have the milk of 200 cows. Last year began making May 10, and had during the season the milk of 250 cows, from which 59,065 lbs. of cheese were made. A. Parish & Son, proprietors.

ALLANGROVE CHEDDAR FACTORY commenced operations May 4, with 50 cows; expect during the season to have the milk of 800 cows. Last year began making May 4, and had during the season the milk of 300 cows, from which 68,000 lbs. of cheese were made. The season is very backward and cold and feed scarce, making the yield of milk far below that of last year. D. McPherson, prop., River Raisin.

FREEPORT commenced operations May 18, with about 90 cows; expect during the season to have the milk of 300 cows. We are starting a new factory, and therefore we cannot account for last year. Snyder & Weaver, props, Freeport.

RED CLOVER commenced operations May 5, with about 350 cows; expect during the season to have the milk of about 400 cows. Last year begun May 5, with 450 cows, from which 105,338 lbs. of cheese were made. Parish & Chamberlain, props., Morrisburg.

The Progress in Butter.

In all the dairy regions of the country, and especially at the West, there has been manifested, for several months, an unusual interest in the improvement of the butter product. The excellent returns made by skillfully managed creameries and butter factories, the wide margin which often exists between the prices gained by some single dairy and the average price of the neighborhood, have led butter-makers generally to cast about for reasons which shall explain the difference between their neighbors' profits and their own. Memory does not reach to the time when there was not a great difference between the butter making skill or farmers' wives. The ability to make the finest article was regarded as a gift of genius in some cases, while in others the good results were attributed to some mysterious turn in the making, some pet flop of the product, which added a sixpence a pound to the value of the material. There is no doubt that much superstition has prevailed in the matter; there is no doubt that often the real cause of success was lost sight of and

prominence was given to non-essentials, for many times the successful butter-maker has explained her process to her neighbor, and the neighbor has observed it carefully in her dairy with no improvement in the yield. Lately, much of the mysticism has been removed from butter-making. Differences which were thought to be occasioned by a certain twisting of the wrist, have been found to lie much deeper. It has not been proved that milk is anything but milk, but it has been shown that milk may be robbed and enriched, may be kept pure or laden with the germs of destruction. The discussions of butter-making have shown that there are things to be considered which did not enter into the older butter-makers' philosophy. They reached success by the observance of these things, but it was an observance by intuition, by accident, by habit. They succeeded by things which they did not consider of importance, and did not speak about. The progress of inquiry and enlightenment has changed to a great extent the popular view of success in butter-making. A thousand men and women are now thinking, studying and experimenting upon matters which a few years ago were unthought of. It is to the accomplishment of this prevalent spirit of inquiry and investigation to which the improvement may be accredited. It is worth while to recognize this fact, and to believe that improvement is within the reach of any one who honestly and perseveringly seeks it.

The success of the creamery and factory system in making butter has proved that by right treatment the butter of a neighborhood may be raised to a uniform level and to a level much above an average of old methods. This fact has in itself done good service by awakening the people to their own capacities for improvement. It has done much to sweep away the ideas of genius and mysterious secrets which once prevailed, by showing that both genius and mystery consist in an observation of natural conditions. In the dissemination of such ideas as well as in securing the dairymen better material profits has the creamery success been a blessing to the butter industry. In our older dairy regions the benefits are noticeable, but it is in the newer regions that the improvement has been most marked, and in these just now the eagerness toward greater improvement is apparent.—*Utica Herald.*

The Milk Blossom.

It is perhaps well known that once upon a time a Frenchman claimed to have discovered a system of lacteology (to coin a word), a method of determining the quality of milch cows. It is claimed for phrenology that external signs indicate the mental and moral character of men. This philosophy claimed that external signs indicated the milking qualities of cows—that actual milk as well as the milk of human kindness had its outward manifestations. These signs, or "blossoms," as the coal diggers would call them, are found on the udder. They are not the out-cropping of milk veins, however, but are, it would seem, wholly arbitrary in their nature. The system is based mainly upon the manner in which Nature has parted the hair on the udder. Probably there are few who know that some of the hair on the udder points upward and some of it downward. An old butcher to whom we gave the outlines of the system many years ago exclaimed: "By George, I've butchered cattle twenty years, and I never knew that hair grew up on the bag."

A classification of various "blossoms" may be found in Guenon's book. There are also some minor signs which should accompany the peculiar shape of the hair, such as thinness of skin, silkiness of coat, black spots on the escutcheon, as the blossom is called.

But though there may be many of our readers who have heard of such a system, we presume they are few who know that there are a great many dairymen who rely upon these arbitrary signs, in selecting calves to keep, both males and females, for the bulls are also marked.

Notwithstanding the total apparent distance between quality and quantity of milk, and this arrangement of hair, yet during observations extending over twenty years, we have never seen a well marked cow that was not a good milker.—*Iowa Stock Journal.*

We learn that Mr. Angus Fraser, formerly of Embro', and more recently of Ingersoll, is about erecting a cheese factory within a few miles of St. Mary's. There is not another factory within a good many miles, and Mr. Fraser has already received the promise of the milk of over 400 cows. This augers well for the prosperity of the enterprise, and we trust the fruition of the proprietor's hopes will be fully realized. It will be known as the St. Mary's Cheese Factory.—*Stratford Beacon.*

Yield of a Milk Dairy.

I send you a statement of the milk product of my cows for the last three years. On the first of the year 1871, I commenced weighing the milk at each milking, in order to ascertain the exact product and relative merits of each cow, for the purpose of eventually obtaining a herd of superior animals of my own raising. A superior herd may be obtained sooner and more easily, and perhaps at less cost, by the selection and purchase from others, but there is a degree of pleasure and satisfaction in breeding and raising one's own stock which fully compensates for the extra time, trouble and expense.

It will be observed by the table that the herd consists of a variety of breeds and grades. Prior to 1871 it was intended to make butter, and five native cows (Nos. 1 to 5), selected for their butter quality, and one full blood Jersey (No. 6), and calf (No. 9), were purchased, and all of them bred to a Jersey bull for this purpose; but it was found that milk could be sold to better advantage, and the idea of breeding Jerseys for butter was abandoned. Three cows (Nos. 7, 8 and 10) selected for milk were obtained, and soon after a thoroughbred Ayrshire bull took the place of the Jersey. In consequence of the general infusion of Jersey blood, the quantity of milk is not large, but its superior quality makes it sought after at full prices. It is expected that the introduction of the Ayrshire blood will increase the quantity without materially injuring the quality of the milk. No purchases have been made since 1870, except one (No. 22 in 1873), to supply an extra demand for milk), and nearly all of the purchased cows have been disposed of.

It will be seen by the record that the average product has been increased from 2,392 quarts per cow in 1871, to 2,492 quarts in 1872, and to 2,608 quarts per cow in 1872. In order to ascertain more accurately the relative ability of each cow to secrete milk, the same amount and quality of food is given to each, without reference to breed or size of the animal, the only difference being in the smaller quantity of grain given to heifers under four years. To cows four years old and over, one quart of corn meal and two quarts of shorts, are fed twice a day, and to heifers under four years half this quantity is given. To all, hay, in as equal quantity as may be without weighing, is fed in winter, and about one-half bushel of roots—mangolds and sugar beets—to each. In summer the same quantity of grain with pasturage, helped out in August and September by green corn fodder. With this feed the cows are all in good condition, and without material difference in this respect.

The cost of keeping each cow being substantially the same, it becomes easy to determine by reference to the tables, which cows are the most profitable to keep and to breed from for a milk product.—*Cor. Country Gentleman.*

1871 Nos.	Breed.	Age April 1st	Pounds for the year.	Quarts for the year.*	No days milked.	Ave. for days milked.	Ave for the year.	When calved	Remarks.
1	Native				...	...			Butchered in 1870.
2	Native	12	4233	1974	3-6	6 05	5 41	Farrow.	Butchered Nov 22
3	Native	12	5335	2451	326	7 61	6 89	Farrow.	Butchered Nov 2..
4	Native	..	....	....	...	...	..		Butchered in 1870.
5	Native	9	4012	1880	319	5 89	5.15	Farrow.	Butchered March, 1872.
6	Jersey	5	4277	1989	301	6.61	5.45	February 10.	
7	Grade Short-Horn	8	47_4	2197	288	7 63	6.01	April 17.	
8	Short-Horn	4	6286	2921	298	9 81	8 01	Dec 2, '70.	
9	Jersey from No. 6	3	5646	2626	335	7.84	7.19	January 30.	Aborted in August.
10	Ayrshire	4	7506	3491	315	11.08	9.56	October 20.	
11	Grade Jersey from No. 4	2	3950	1837	293	6 27	...	March 12.	First calf.
12	Grade Ayrshire from No. 7	2	3305	1542	285	5.40	....	March 21.	First calf.
13	Grade Jersey from No. 1	2	3624	1685	270	6.24	....	April 5	First calf.
14	Grade Jersey from No. 3	1 10-12	1064	495	95	5.21	....	Sept. 27.	First calf.
	[Average age, 5.40] Equal to 10½ cows for the year		54012	25121	3451	7 28	6 92		
	averaging	......	51.4	2392			6.55		
1872.									
6	Jersey	6	5328	2478	300	8.26	6 79	February 6.	
7	Grade Short-Horn	9	4600	2140	283	7.56	5 86	October 2[illegible]	
8	Short-Horn	5	7702	3582	312	11 48	9 81	[illegible]	
9	Jersey from No. 6	4	3498	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
10	Ayrshire	5	[illegible]	[illegible]	310	[illegible]	[illegible]	November [illegible]	[illegible]
11	[illegible] from No. 4	3	4373	[illegible]	325	[illegible]	[illegible]	[illegible]	
12	Grade Ayrshire from No. 7	3	4501	2093	308	[illegible]	[illegible]	[illegible]	[illegible]
13	Grade Jersey from No. 1	3	[illegible]	2764	[illegible]	[illegible]	[illegible]	[illegible]	
14	Grade Jersey from No. 3.	2 10-12	4740	[illegible]	[illegible]	[illegible]	[illegible]	November 7	
15	Short Horn from No. 8	2 2-12	4061	[illegible]	[illegible]	7 [illegible]		[illegible]	First calf.
16	Jersey from No. 9	2	4669	2144	[illegible]	[illegible]		[illegible]	First calf.
	[Average age, 4.10] Equal to 10½ cows for the year,		56273	26174	[illegible]	7.[illegible]	[illegible]		
	averaging		[illegible]	[illegible]			[illegible]		
1873.									
6	Jersey	7	4186	[illegible]	[illegible]	6 [illegible]	[illegible]	[illegible]	[illegible]
7	Grade Short-Horn	10	2599	[illegible]	[illegible]	[illegible]			[illegible]
8	Short-Horn	6	9123	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
9	Jersey from No. 3	5	4193	[illegible]	[illegible]	[illegible]		[illegible]	[illegible]
10	Ayrshire	6	6410	2981	[illegible]	[illegible]	8.17	[illegible]	
11	Grade Jersey from No. 4	4	4163	2076	[illegible]	[illegible]	[illegible]	[illegible]	
12	Grade Ayrshire from No. 7	..	....	....	...				[illegible]
13	Grade Jersey from No. 1	4	7076	3291	369	[illegible]	[illegible]	[illegible]	
14	Grade Jersey from No. 3.	3 10-12	1095	509	81	6 [illegible]			[illegible]
15	Short-Horn from No. 8.	3 2-12	4455	2072	379	7.[illegible]	[illegible]	[illegible]	
16	Jersey from No. 9	3	4989	2320	[illegible]	[illegible]	[illegible]	[illegible]	
17	Jersey from No. 6	1	1102	513	61	[illegible] 19		[illegible]	[illegible]
18	Ayrshire from No. 10	2 5-12	3456	[illegible]	229	7 08		[illegible]	[illegible]
19	Jersey and Short-Horn from No. 8	2 3-12	[illegible]	1192	122	9 77		[illegible]	[illegible]
20	Grade Jersey three-quar. fr. No. 11	2	2650	[illegible]	167	7 [illegible]		July [illegible]	[illegible]
21	Grade Jersey	2	1601	[illegible]	[illegible]	5 [illegible]		August 8.	[illegible]
22	Grade Ayrshire	7	3842	1787	211	[illegible]		May [illegible]	[illegible]
	[Average age, 4 10] Equal to 11½ cows for the year,		[illegible]	29957	3470	8 65	7 46		
	averaging		[illegible]	[illegible]			[illegible]		

* One quart being 2 1-5 pounds.

Coloring Cheese.

One of our correspondents desires to know "whether colored or pale cheese will be in most demand the coming season, and which of the two will bring most money in market?" So far as the English markets are concerned we do not hear of any change whatever from the demand of former years. The London market requires colored cheese. In Manchester pale or uncolored cheese is most popular. There is a larger proportion of colored cheese wanted in England than of uncolored, and so long as we export cheese we must furnish what the markets demand or accept a lower price for any neglect in not consulting the taste of our customers. There has been a very strong effort made at our dairy conventions to do away with the practice of coloring cheese, and many believe that our factories should unite together and abandon the practice. They urge that a persistent effort in this direction would soon educate Englishmen to prefer pale cheese to any other, and thus the factories would be rid of a useless and expensive part of the work. True, the coloring matter added to the cheese does not improve its flavor or quality, and it would be a good thing if none were used, but it is absurd to suppose that any effort on the part of our factories could change English taste so that pale cheese would always be preferred. Then again, no compact like the one proposed could be made with the factories, and if such a compact was made and rigidly adhered to, we should only be throwing away the chance of successfully competing with English production, since consumers in England would still prefer colored cheese, and the English dairyman could furnish it at an advanced price over American, simply on account of the color.

Some argue that the coloring of cheese is a cheat, and that the practice is morally wrong. This assumption is hardly true, since no one makes a secret of coloring and no one misrepresents in this matter. Most consumers of colored cheese know

that it is artificially colored, and they prefer it because the color suits their fancy better than pale cheese, or because educated to a certain style. Any radical change—especially with Englishmen, who dislike change—is distasteful and slow of introduction. For cheese designed for a foreign market, therefore, we should not advise it to be made without color, except on special contract. Sometimes buyers want a certain quantity of pale cheese to fill orders, and where extra quality can be secured they are willing to pay an extra price above that for the best colored cheese. But, on the other hand, if the sale is made to dealers who buy for the London market, pale cheese will not bring so much money as colored. The home markets will take considerable quantities of pale cheese, and we are told by dealers that the demand for uncolored cheese is increasing from year to year in the home trade.

From what we have said it will be seen that manufacturers should understand clearly to what market their goods are going and adapt their manufacture to the wants of that market. The buyers who are accustomed to handle the cheese in the particular locality should be consulted, as they will be able to give information concerning the quantity of pale cheese likely to be wanted in the markets for which they purchase. In regard to the coloring of cheese, deep shades should be avoided. The popular fancy now is for a light straw color—a shade somewhat resembling rich cream. A deep orange color sometimes used is objectionable, and will lessen the value of the goods in market. The color should be uniform in the different cheeses, since a lot of cheeses, each of a different shade, detracts very much from their ready sale. The recent introduction of annattoine has been a great improvement in the coloring of cheese, since it is the pure coloring matter of the annatto, and free from adulterations.—*Rural New Yorker.*

BUTTER MAKERS' CONVENTION.—The time for holding the Butter Makers' Convention, in Indianapolis, Indiana, is June 17th and 18th. Popular speakers will address the meeting.

THE *Belleville Intelligencer* says that a large amount of cheese, the products of several factories, has been sold there to a prominent buyer at 12¼c. per pound. This is a considerable advance on last season's figures, and bodes well for the success of the present operations in dairying.

HON. X. A. WILLARD, who has just returned from a lecture tour in Virginia and Maryland, reports that the prospect is good for a heavy wheat crop in those states. The season has been unusually backward and the weather cool for the season. Mr. W. has been invited to deliver an address before the great Butter Convention which meets at Indianapolis June 17.

FIRST PRIZE BUTTER.—At a recent exhibition of the Chester County Agricultural Society, Pennsylvania, Isaac Acker received the first prize on butter, who, on being called on for his mode of management, remarked as follows :—He feeds ten quarts of corn-meal and bran to each cow, per day, with hay. Does not think that corn fodder makes good butter. The temperature of the cream at churning was fifty-seven degrees, and it was churned from twelve to twenty minutes. Uses six ounces of salt and three ounces of white sugar to twenty pounds of butter. Uses an Embree butter-worker, with a sponge and cloth, and did not wash the butter with water. Mr. Acker believes that the essentials to make the dairy business pay are good cows, well fed and well taken care of, good and convenient dairy houses and appliances, and then produce a good article and sell it at a high price. One year ago his cows averaged 230 pounds each.—*Utica Herald.*

A NON-PATENTED TAIL-HOLDER.—The best, cheapest and in every respect the most convenient cow tail-holder is to hold the hair of the tail in the bend of the milker's leg, back of the knee, as he sits on the milking stool. The writer owns a cow that is an incessant switcher when she is being milked. If the tail is not held she will bring it round gently, and with the accuracy of clockwork drop the long bushy appendage directly in the milk pail. When her calf was wont to suck, as well as when she is milking, this caudal appendage is in gentle motion. When her milker takes his seat on the stool to relieve her distended udder of the rich and fragrant milk, the first thing is to secure the end of the long switcher beneath his knee. This manner of holding the tail while the cow is being milked is far better than to tie the end to the cow's leg, as there then will be no tying nor loosening. It is far superior to any and every tail-holding device that is protected by letters patent. It costs no patent right royalty, and it is always at hand and in working order.—*N. Y. Herald.*

Poetry.

Cremation.

Then the night wore on, and I we knew the worst,
That the end of it all was nigh;
Three doctors they had from the very first:—
And what could one do but die?

"Oh, William!" she cried, "strew no blossoms of spring,
For the new 'apparatus' might rust.
But say that a handful of shavings you'll bring,
And linger to see me combust.

"Oh, promise me, love, by the fire hole you'll watch,
And when mourners an l stokers come near,
You will see that they light me some solemn, slow match,
And warn them against kerosene.

"It would cheer me to know, ere these rude breezes waft
My essence away to the pole,
That one whom I love will look to the draught,
And have an eye on the coal.

"They promise me love '—and her voice fainter grew—
"When this body of mine calcifies,
You will stand just as near as you can to the flue,
And gaze while my gases arise.

"For Thompson—Sir Henry—has found out a way
(Of his 'process you've surely heard tell),
And you burn like a parlor-match gently away,
Nor even offend by a smell.

"So none of the dainty need sniff in disdain
When my carbon floats up to the sky;
And I'm sure, love, that *you* will never complain,
Though an ash should blow into your eye.

"Now promise me, love '—and she murmured low—
"When the calcification is o'er,
You will sit by my grave in the twilight glow—
I mean by my furnace door.

"Yes, promise me, love, while the seasons revolve
On their noiseless axles, the years,
You will visit the kiln where you saw me 'resolve,'
And leach my pale ashes with tears."

—*John Paul, in Harper's Magazine.*

Miscellaneous.

Thrifty Farmers.

It is a fact that there is as great difference between farmers as other people. Some are thrifty and getting up in the world, while others are thriftless and running in debt. This is apparent to any observer. It is not hard to tell who the thrifty are. Even though you know little of their private affairs, there are certain unmistakeable signs, sometimes in the farmer's personal appearance, in his conversation, in the aspect of his family, his house and barns, and fences, that tell the story to any careful observer of men and things. But let us look at these tokens of thriftiness a little more in detail. What are they? Not splendid dresses upon himself and family; not a flashy equipage nor a showy house and furniture. Have we not all seen a display made of all these and the like things, while the farm itself was running down and debts were running up, which soon swept the vain proprietor from the old homestead, and it passed into his more successful neighbor's hands? Verily we have seen this done. Another fact we wish to notice, viz., it does not prove a farmer to be getting "*forehanded*" because he is a great trader, is seen buying and selling, and swapping horses and cattle, and is considered keen for a trade; oftentimes while he is running about after a trade, the cattle and sheep are running into his grain, and the weeds are running over his corn fields and garden, and his farm from one end to the other is running down; no, this is not thrifty farming; rather when we see such things we mark them as signs of thriftlessness. But when we see a farmer content with simplicity in dress, equipage, house and furniture; when we see him stick to the farm, satisfied with what he can produce from it by patient and careful industry; when we see him systematical in the improvement of his land, not *skimming* it, draining its low and wet parts, manuring and ploughing as science and experience require, seeking for improved stock and taking good care of it, seeking for useful information from books, agricultural papers, and from experiments made by brother farmers, and taking a due interest in agricultural fairs and club meetings, we set him down as one who is likely to get up in the world.

Such a farmer will be often seen hauling manure, ashes, etc. from the village, carting muck and leaves from the waste corners of his own lands to add to the bank stock in the barn yard; he will be seen introducing improved farm implements so far as they have been thoroughly tested; he will be seen planting apple trees, pears, cherries, plums, grapes, and all manner of fruits for the comfort of his family and for the sale of fruit, and, not the least, as a pecuniary resource when old age shall have come upon him and rendered him less able to perform the harder labors of the farm. He will make agriculture his *specialty*, giving to it—as does the clergyman, lawyer and physician to his own profession—his best energies. He will not be ashamed of his farm frock any more than the clergyman of his white cravat; he will honor his own calling, will hold his head up among men with dignity and independence, and while he labors to promote his own welfare and that of his household, he will also seek the good of all his fellow-men.—*Cor. Mirror and Farmer.*

House-building and Drainage.

The prevalence of typhoid fever in several localities just at present leads us to offer a few suggestions as to its prevention by proper hygienic measures. That it may be defied in almost every instance by observing proper precautions, there is no doubt at all. All admit that it has its origin in decaying animal or vegetable matter; probably the former, possibly both. This fact was forcibly impressed on our mind during a late trip in the country. In a remarkably healthy neighborhood we found two families quite a distance apart, too, both having several members down with this disease. One glance at the location of each instantly told why they were thus attacked while their immediate neighbors escaped. The houses in both instances were old and decaying, and stood in such a position that all water which fell near, and all refuse from the houses, flowed directly to them, and were absorbed by the soil underneath. Here the accumulations of years, perhaps, were rotting; both places had a damp, foul smell about them, and the cause of the fever was at once apparent. Farmers are too apt to think that drainage is all well enough for large cities, but of no use about a farm house whatever. This is all wrong; and the first desideratum in choosing a location for a dwelling ought to be that there shall be sufficient slope or elevation to secure good drainage. If this is not practicable, then the structure should be placed at a sufficient height from the ground, to allow free ventilation beneath; and this should always be left unobstructed, securing the warmth of the building by very tight floors. Another simple precaution of great value is to have the pit or sink, which almost every family has for the reception of refuse matter, so arranged that no foul vapors can escape. This can be arranged by having a double elbow in the pipe leading to it, so that there will be a constant stratum of water in the elbow to intercept any naseous or unhealthy gases as they escape. By allowing no animal or vegetable matter to decay around the house, and by keeping the ground dry by proper drainage, with such other little sanitary precautions as will suggest themselves to the ordinary thinking mind, this dreaded, lingering, prostrating disease might almost be banished from the land.—*Rural Press.*

Cat Nursing Chickens.

The following strange facts in animal life may possibly prove as interesting to some of your readers as they were surprising to myself. In the poultry yard of a near neighbor of mine, two chickens, hatched late last autumn, were deserted by their mother at an early age, and used to take up their quarters at night in a shed, which a cat and her young kittens had also selected as their home. To the no small astonishment of my friend he one morning discovered cat, kittens and chickens all huddled up together in the same warm nest, and apparently on the best of terms. From this date the cat treated both chickens and kittens alike, *i.e.*, bringing them food, &c. The chickens, on the other hand, always returned at night to the cat, and sometimes actually roosted on her back. Such a trait in her character was of course not easily forgotten, and when the following spring some other chicken happened to get injured in the head, it was at once introduced to the same cat, who without hesitation rewarded the confidence thus reposed in her by commencing to lick the head gently where the feathers were torn off, and taking care of the chicken until quite recovered. After this she would constantly follow the fowl about, and may often now be seen basking in the sun with this chicken on her back.—*Cor. Field.*

To banish rats, plant asphodel near the barn or stable, or put some of the plant in their holes. Rats have such an aversion to this plant that they will quit the place altogether, and you will have no dead rats putrifying under the floors.

"If I had Leisure."

"If I had leisure, I would repair that weak place in my fence," said a farmer. He had none, however, and while drinking cider with a neighbor, the cows broke in and injured a prime piece of corn. He had leisure, then, to repair his fence, but it did not bring back his corn.

"If I had leisure," said a wheelwright last winter, "I would alter my stove-pipe, for I know it is not safe." But he did not find time, and when his shop caught fire and burnt down, he found leisure to build another.

"If I had leisure," said a mechanic, "I should have my work done in season." The man thinks his time has been all occupied, but he was not at work till after sunrise; he quit work at five o'clock, smoked a cigar after dinner, and spent two hours on the street talking nonsense with an idler.

"If I had leisure," said a merchant, "I would pay more attention to my accounts, and try and collect my bills more promptly." The chance is, my friend, if you had leisure you would probably pay less attention to the matter than you do now. The thing lacking with hundreds of farmers who till the soil is, not more leisure but more resolution—the spirit to do, to do now. If the farmer who sees his fence in a poor condition would only act at once, how much might be saved. It would prevent breechy cattle creating quarrels among neighbors, that in many cases terminate in lawsuits which take nearly all they are both worth to pay the lawyers.

The fact is, farmers and mechanics have more leisure than they are aware of, for study and the improvement of their minds. They have the long evenings of winter, in which they can post themselves up on all the improvements of the day, if they will take ably conducted agricultural journals and read them with care. The farmer who fails to study his business and then gets shaved, has none but himself to blame.—*Cor. N. E. Farmer.*

'Tis midnight, and the setting sun
Is rising in the wide, wide West.
The rapid rivers slowly run.
The frog is on his downy nest;
The pensive ghost and sportive cow
Hilarious hop from bough to bough.

To take stains out of mattrasses, apply a paste of soft soap and starch over the spots, and wash it in with a damp sponge; if not clean at first, put on another paste, and repeat this until the spots disappear.

THE *Journal of Chemistry* says: Hot alum water is a recent suggestion as an insecticide. It will destroy red and black ants, cockroaches, spiders, chintz bugs, and all the crawling pests which infest our houses. Take two pounds of alum and dissolve it in three or four quarts of boiling water, let it stand on the fire till the alum disappears, then apply it with a brush, while nearly boiling hot, to every joint and crevice in your closets.

A LADY correspondent of *Moore's Rural New Yorker* says: I take good, thick paper, cut three-cornered, and double it in the shape of a funnel, fill with dirt, and planting a seed in each one, bury it in a box filled with earth. The seeds will soon germinate. When the plants are ready to remove to the flower-bed, lift the paper out and plant it like roots. The paper will soon rot and the plants will never wilt. I transplanted nasturtiums in this way with perfect success.

Most housekeepers have felt the need of a receipt for mending knives, or rather for fastening knives and forks to their handles. The following mixture is recommended for this purpose in the *Scientific American:* Mix together one pound of resin and eight ounces of sulphur, and keep it either in bars or reduced to powder; mix one part of this powder with half a part of iron filings, fine sand, or brick-dust, and the cavity of the handle is to be filled with this mixture.

A QUESTION FOR EGG PHILOSOPHERS.—About a year ago an egg was shown to the editor of the *Groton Journal*—a perfect egg, shell and all, about an inch in diameter, which was formed within the yelk of a good-sized hen's egg. A similar one has recently been shown to the editor of the *Norwalk (O.) Reflector*, who pronounced it "a curiosity certainly." And in the *Encyclopedia Americana*, published in 1835, it is said:—"It happens not very rarely that a small egg is found within one of common size." Now the question is, first, how the smaller came within the larger? (the king's question of "how got the apple within the dumpling?") and second, how the shell of the smaller could possibly form within the larger.

A PATENT RAT-TRAP.—The local editor of the *Burlington (Iowa) Hawkeye* says a man has invented a patent rat-trap that does not require any bait, and will fetch a rat every time it reaches for him. It operates on the principle of a stomach-pump—the inventor is a "retired physician, the sands of whose life have nearly," &c.—and the trap is placed at the mouth of the rat hole. When it is wound up and the suction begins the rat comes. He may hold on to the ground with his teeth, and hump his back and paw dirt, and weep, and yell for the police all he wants, he comes out of that hole backward, is dragged into a back compartment, where a steel glove drags his hide off and lays it aside for a kid glove manufacturer, while the carcass is pushed into a little furnace and incremated.

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