is only on the lightest soil that a greater depth than two inches will be required. With rough land and clods, it may be necessary to give a greater depth.

Gardeners have found it important to "firm" the soil in order to insure the germination of fine seed sown slightly below the surface. For large seed this operation is less essential, but cases may occur when with a dry or loose soil, rolling the ground may be of much use. But wherever resorted to, the farmer should carefully observe if it makes the particles of soil adhere together, in which case it will do more harm than good. The same care must be used whether to sow before or after rain, where the farmer has the choice. If the soil is granular or cloddy, a shower may aid in making it mellow when worked, and better fitted to compress all the sides of the seeds. On such land sowing before rain may leave the seed lying loosely among the clods. But a long and heavy rain may render the soil unfit to be worked, and preceding it would be a better time. It is absolutely necessary for the farmer to use his judgment in all cases of the kind.

A thorough preparation of the soil, as already stated, is by far the best insurance against any failure; and while deep tillage is valuable to promote the subsequent growth of the crop, a fine tilth is essential to its early progress nearer the surface.

A crop raised in the way here recommended will be less liable to harm by winter-killing; and on all soils requiring thorough tile-draining, both will be essential. Soils apparently dry enough at the top, often have a water-soaked or muddy subsoil, and the difference between such soil and one well underdrained is shown in figs 4 and 5, one representing the plants stunted by the water below, and the other in full vigour in dry subsoil.—*Country Gentleman.*

LIGHT AND AIR ON BUTTER.

PROF. DUCLAUX, says the *Mark Lane Express*, has lately been at work examining the conditions for keeping butter. As a true scientist, he first tries to find out the exact difference between fresh and deteriorated butter, especially in the fatty and the volatile acids, and their products of decomposition. Thus he finds that the relative proportion of butyric acid is but very little affected by long keeping in air-tight packages, while in an open package butyric acid is quickly developed, beginning from the outside. Organisms are partly the cause of rancidity, yet Duclaux first investigates the influences of warmth, air and light. Fresh butter already contains about 0·1 per cent. free butyric acid, the proportion of which increases to more than one per cent. in rancid butter. This increase is caused by partial decomposition, especially of the glycerides of the volatile oils—a more or less spontaneous phenomenon at which an important oxydising takes place. By numerous experiments, Duclaux shows that the oils are constantly absorbing oxygen slowly in darkness faster in moderate light, and very quickly in bright sunlight, which also fades the surface of the butter. In consequence of this absorption of oxygen in sunlight, a considerable increase of weight is observed in the butter, while now volatile acids are formed, even to the amount of two per cent., the fatty acids changing into formic acid. To avoid these changes it is important to protect butter against the influence of oxygen (air) and sunlight. Even immediately after churning Duclaux thinks precaution should be taken. By the fermentation of the cream during its preparation for churning, carbolic acid is developed which drives out the oxygen from the churn, and care must be taken not to introduce oxygen at later stages. Thus, washing the butter with water rich in oxygen should be avoided, and, if necessary at all to wash it, only spring or well water, or even water artificially charged with carbonic acid, should be used, while surface and rain water is absolutely to be rejected. Butter should, under no circumstances, be exposed to sunlight.

SHALL WE QUIT SHEEP?

WHY, no, of course not. Quit sheep? No more than we shall quit cattle, horses, hogs, wheat, or any other staple farm product. Texas has quit to an alarming extent, and many other sections, but they have done so rashly, and will rush back again. It is the old, old story of history repeating itself, and the reaction will come again, to the timid the damages, to the enduring the benefits. "But wool is so low, and promises to be for a long time." True, and may be for ever and ever, but wool is only one profit from raising sheep. Count them all up, and figure close. A small aggregate profit on sheep beats wheat, with all its labours, expenses and uncertainties, its wear and tear on land, on men and women, teams and machinery. The chances on sheep are sure for more profits, though small in cash immediate. They come twice a year, a fleece, a lamb. As auxiliaries to good farming they are working all the time, day and night. The chances on wheat raising are desperate if debts are to be paid. The raising of cattle and horses are slow and expensive ways of making money. It takes three or four years for them to come to market. They often eat their heads off before they are sold. A sheep comes up every six months and pays its bills; it does not die in debt. Though the profits are small they come around often. Small profits, if safe, are better than larger ones, if risky. Yes, we are going to raise sheep. We can't do better. If we quit, it will be because we have to. We shall not be scared out of sheep. Some are scared now. They are always ready to run. They are like sheep, afraid of everything they see that looks funny.—*Journal of Agriculture.*

A SUBSTITUTE FOR THE SILO.

THE English farmers have adopted a system of stacking green fodder such as clover and grass, and stretching wires over the stacks which are drawn very tight by a simple contrivance resembling a small windlass. Lord Powerscourt in a recent letter to the London *Times* makes the following comments.

It is not necessary to build silos. Take the wet hay and pile it up into stacks in the fields where the stock are to be wintered pressing it well down by the trampling of labourers, and make stacks of some seven or eight feet high, and if there are brewers' grains to be had, put in a layer of them half way up, or near the top. When the wet hay is well pressed, put eighteen inches or two feet of any rough weeds or fern on the top, press that down firm, then get pieces of strand wire long enough to cross the top of the stack, and tie heavy stones or weights to the end of the wires, hanging down on each side, so as to weigh the stack well, and leave it so till the winter, when the silage can be cut and thrown down in the fields for the cattle. There will be some waste on the outside of the stack, but most of it will be good silage, and the wet hay is of no use as it is, and may in this simple and inexpensive manner be made into good wintering for horned stock, sheep or farm horses. Lord Cloncurry has tried this in the County Kildare for the last two or three years with great success. I saw his stacks last year, from 30 to 40 yards long, and 8 or 9 feet high. It will heat to some extent, but that does it no harm, and if it is well pressed, it will not take fire. Of course, there would be danger of that if not pressed enough.

Whether our more severe weather would allow the convenient use of such stacks is a question for practical farmers to consider; we see no other reason why they can not be made useful here.—*Mass. Ploughman.*

HARVESTING FRUIT.

THE question as to the proper time to harvest the apples in any particular orchard should be settled by the owner, and the decision should be made after a careful examination of the condition of the fruit; his judgment should not be warped by the fact that one or a half a dozen neighbours have commenced to harvest their fruit, because the location and the character of the soil will often make from a week to [illegible] time of ripening [illegible] rchard on a light, warm [illegible] st to gather his apples at least a week earlier than if on a cold, heavy soil, and if the land has been kept well cultivated during the season, the fruit will mature earlier than if the land is in grass. When an apple is fully matured it should be picked from the tree, because, if not picked, it will be very likely to drop, and thus, as a rule, be so bruised as to destroy its keeping qualities, but if it does not drop it becomes overripe, which means the commencement of decay. The fruit grower who has a good, cool fruit-house to store his apples in, may begin to gather earlier than one who has to store in a warm barn, or leave the apples in barrels under the trees, because there is often a warm period during the first few weeks in October which does great injury to apples that are exposed to sudden changes of weather; an even temperature near the freezing point is best adapted to the long keeping of both apples and pears.

Having decided when to commence gathering apples, the next important point to consider is the manner of gathering and sorting. It is very safe to say that the value of the apple crop would be largely increased if more care was taken in handling the fruit; every apple should be picked from the tree and carefully deposited in a basked lined with cloth, and when the basket is filled the fruit should not be carelessly emptied from it into an empty barrel, but taken out by hand and assorted into three qualities; the first to be carefully packed in good clean barrels for shipping, or a select home market, the second quality also to be put up in barrels, to be sold for early winter use, the third quality to be stored for feeding to cattle, or made into cider. No apple that has fallen from the tree should ever be put with the first quality, however well it may look, for the chances are that it will have received a bruise that will cause early decay. For home use fruit should be put up in square boxes that hold about a bushel, and the cover of each box should be hung on hinges, so when the apples are wanted one or more can be easily taken out and the box left shut tight from the air. Barrels are entirely unfit to keep apples in for family use.

APPLES IN NOVA SCOTIA.

E. L. WAKEMAN, in a letter to the *Cincinnati Times*, during a trip through Nova Scotia, says of the famous Nova Scotia orchards:

I have more faith, however, in Nova Scotia apples than in her gold. The Annapolis and Gaspereau valleys contain about 600 square miles of cultivable land. At the present time one-tenth of the area, or nearly 40,000 acres is planted with apple trees. Almost a half-million barrels of Gravenstein, Baldwin, King of Tompkins, Nonpareil, Russets, Ribston Pippins and other varieties of apples are now annually yielded and exported. Over three-fourths of the area is yet in young trees. From 5,000,000 to 10,000,000 barrels of apples will certainly be raised annually in these two valleys whihin ten years' time. They are proven to be the finest and hardiest varieties in the world, and the demand is never met. In the fall, American buyers fill the region, purchasing in 1,000 barrel lots. Experience has proved that the European markets are just beginning to know this fruit region, and, as every barrel which can now be secured is taken there, the competition between American and English buyers will always insure the Annapolis Valley apple raisers from \$3 to \$5 per barrel in gold. The method of English shipment is highly interesting and is additional good luck to the Nova Scotia apple farmer. He has only to pack his apples carefully, stencil and brand his name upon it, mark it "John Doe," or "John Roe, London," and deliver it at any depot of the Valley railway. If he send 100 or 1,000 in this way he has no further trouble or anxiety. His apples go direct to Halifax. There steamship agents, who are practically agents of London buyers, care for them. In three weeks' time the apple grower receives by mail exchange on London for the apples he has left at the station platform and the price is the highest paid in the world. These conditions are giving a great impetus to the apple culture in this wonderful valley. About forty trees are planted to the acre, and at maturity yield from three to seven barrels of apples, for which never than less \$3, and often more than \$5 per barrel is secured. The whole valley is a vast orchard and every farmer is rich, or rapidly getting rich.

On every apple farm—for the extent of culture has long since passed the orchard area with each apple-grower—from 100 to 10,000 new trees are set out each year. At this rate of development and with the constantly increasing scientific care and attention, the possible limit to apple growing in the Annapolis and Gaspereau Valleys is something startling to contemplate. Six hundred square miles, or 384,000 acres of land are available. All of this tract is valued at from \$50 to \$200 per acre. It is almost impossible to purchase at any price. The region may be justly regarded as the very richest in the world, actual results, conditions and possibilities being considered. In wandering through the valley an interesting reflection came to me, and I wondered whether it might be so to others. That was that wherever apples grow, a kindly, sturdy and progressive people are ever to be found. Think it over and the idea grows upon one. Great houses, greater barns, fine stock, ample competence, large provision for all season and needs, sturdy ways, sensible thrift, genial neighbourings, and all that dear procession of countryside life that has vigour and cheer, with autumn's noble housings and stores and winter's large and generous delights, marshal the thought in memory's bravest trappings.

BARRELLING APPLES.

THE president of the Ontario Fruit Growers' Association, Mr. A. D McAllan, makes the following suggestions on this subject: Choose a solid place on the ground and place a barrel upon a solid piece of plank. Lay the first course of apples with the stem end down. The packer should not take special samples for this course, but just take them as they come, and place them so as to make a solid row on the bottom. The next row also should be put in carefully but the blosom end down. The barrel should be carefully shaken down on that solid plank after each basketful. When the packer comes to the top of the barrel he evens them off according to the variety. One variety will press down closer than another, and that is where a little judgment and experience is required. A man must know every variety he is packing, in order to know how many to put in the barrel; whether he will fill it to the chine, an inch above the chine, or even further. Then the last row has to be placed so as to be in an oval position before you put the press on, with the stems up, so that when you put the press on they will press down evenly and level, and afterward on opening the barrel you cannot tell on which end you commenced. This is a barrel packed properly, and it will carry, and carry thoroughly.

If the apples before packing have been what we call sweated, and the best place to sweat apples is on the ground, they should, if possible, remain on the ground for a week after being picked from the tree, they will carry much better. Of course in wet weather they are better taken into the barn floor or some other convenient place, but, as a rule, they should remain for a week or ten days after being picked; the skin toughens in that time. I find quite a difference in the Northern Spy, which has such a tender skin; in places where they are left on the ground to toughen and get through this sweating process, they will carry much better.

Before packing, the first thing to do is to make up your mind how many grades you are going to have in a pile from which you are packing. There will be two grades at least, and the chances are not more than three. For instance, take a Baldwin grown on the inside of a tree, that is apt to be rather green, that will be one grade. All the medium-sized apples, have them all the one size as much as possible, and pretty high coloured, that is another grade. A barrel of apples, when opened, should be all as near of the one size and colour as it is possible to have them. If you pack your barrels in that way, and brand them accordingly, the buyers in Britain and elsewhere will soon get to know that that brand represents well-selected, honestly packed apples, and the result will be that they will pay a fancy price for it. The price is not so much of a consideration with them as it is to get the very best article.

QUINCES ON APPLE STOCKS.

A CORRESPONDENT wishes to know whether he can grow quinces on apple stocks by the root-grafting process, and whether the quality of the fruit would probably be affected?

Yes, he can grow the quince in this way. The so-called Meech Quince has been propagated by tens of thousands in this way. Whatever effect this mingling of blood might exert upon stock or graft can hardly be known, but the effect on the fruit would probably be slight. The quince is generally and readily grown from cuttings in moist soils. Its tendency is to make a mass of fine fibrous roots. The apple makes no such mass, and if its roots were the sole dependence of graft and stock the growth would probably be affected. But as both stock and graft are planted below the surface of the ground, the quince would eventually root, the apple stock acting as a support or starter till the quince roots were produced. This is the result in the case of Dwarf Pears on quince stock. When the pear stocks root above the quince, the trees become standard pear trees, and the quince stock finally dies or becomes so enfeebled as to be of no further use, because, perhaps, their natural rooting place is near the surface. Whether this would be the final result of the apple and quince union I do not know, and I hardly think the practice has been tried long enough to determine. My experience with pears on apple stocks is that they make a feeble growth for a few years and finally die. The incompatibility is fatal.

Time and experience with the uncongenial affinities of pear and apple has tended to materially modify the Dwarf Pear craze, so popular twenty-five years ago, so that its most zealous advocates are seldom heard from now, and some have so far revised their opinions as to declare they would not plant them as a gift. In conclusion, I think it safe to say that the practice of root grafting the quince on apple is only admissible in case of rare or scarce varieties.—*Garden and Forest.*

CHRYSANTHEMUMS.

BEFORE the appearance of the chilly nights of late September it is well to have all Chrysanthemum plants under cover, as the cold nights, following the warm days, check the young growth and prepare the way for mildewed foliage and poor flowers. While it is a wise plan to keep the plants in the open air as long as possible, they should be securely housed in a light and airy structure before there is any possibility of frost, for although the plants are quite hardy the young buds are very tender, and often a slight frost, when they are just beginning to show, will ruin a whole crop of flowers. The house should be one that will admit an abundance of light and air, for good plants cannot be grown if either of these is wanting. When placed in the house the plants should have plenty of room—that is, they should not touch each other, but stand so that there may be a free circulation of air about them, and as soon as possible after they are under cover measures should be taken to prevent mildrew, which otherwise may spread rapidly, to the great injury to the plants.

The most efficacious means of preventing mildew is fumigating the house with sulphur, but the grower should be warned that he is dealing with a very dangerous element if carelessly handled. Ordinary sulphur when evaporated is not injurious to the plants, but when heated above a certain degree it is converted into a very different thing—sulphurous acid—which is *exceedingly destructive to living plants. Our method of applying the sulphur is by evaporating it over a small* oil stove in a common two-quart agate ware stewpan, filled about one-third or one-half full of flowers of sulphur. The wicks of the lamp are so arranged that the sulphur will boil without burning. As long as it does not catch fire it is safe, but the moment it does so the sulphurous acid is formed, and the house will be quickly filled with the choking, irritating gas, and the plants will appear as if they had been scorched by a severe frost. When simply boiled the sulphur is thrown off much like steam, and will crystallize in very minute particles upon every part of the plants, thoroughly eradicating every particle of mildew; and if this is repeated occasionally the plants can be kept entirely free from it.

As soon as the buds get large enough to be easily handled plants should be disbudded, using a penknife with a small, sharp point. No set rule can be laid down for this operation, but generally speaking the plants set more buds than can be brought to perfection, and the supurfluous ones should be removed if large and perfect blooms are wanted. Many varieties will form a full, strong bud at the extreme end of each shoot, with several smaller ones clustered close beneath it. These latter should always be removed in the large-flowered kinds, as they greatly interfere with the development of the bud that is to remain, and when a specimen bloom is wanted, not only these, but every other bud on the branch, should be taken away, so that all the energies of the branch can be devoted to developing the one left at its extremity. Soon after the plants are housed they need stimulating by some quick fertilizer to bring the blooms to perfection and keep the foliage green and fresh. Liquid manure made by leaching stable manure will answer all purposes, and should be applied rather weak, and quite often while the buds are forming. In fact, once a day, when the plants are badly pot-bound, will be none too often if it is applied in a weak state.

Ordinary, artificial heat will not be needed in the house until the nights become cold enough to freeze or during cold, rainy weather, when a little heat will be found useful in drying the air.—*Garden and Forest.*

BREED VS. FEED.

MAJOR H. E. ALVORD in the *American Cultivator*, thus defines his exact position on the above question: It is a curious fact that in quoting a man in print, and especially upon some disputed agricultural subject, he is often made to say a thing was black, when he has tried his best to express his opinion that it was white. This thing would be very exasperating if it were not so common.

In several places lately I have seen Dr. Sturtevant and others, as well as myself, quoted as stating broadly that it did not make any difference what was fed to a cow, as the milk could not be changed by the food. I hope few people have been led to believe that the persons named ever made such absurd statements.

What I have said and written upon this point has been merely a repetition of the general truth, which is abundantly sustained by experimental evidence, that the breeding has more effect than the feeding upon the quality of milk, if not the quantity, which is produced by any given cow. If a cow, as a result of a long line of breeding in a particular direction, has fixed upon her and her dairy products the characteristics of her breed and family, these will never be materially changed by the way she is fed, or even neglected, so long as she remains healthy. If bred a butter cow and inheriting this trait, she will always be a butter cow. If by nature her milk is poor in butter fats, it will always be so, relatively, no matter how she is fed. If by inheritance a large milker, a generous yield will be her habit, even upon scanty rations; and if naturally a small milker, no quantity of feed will profitably increase her product. Now these statements, which are certainly well substantiated, are perfectly in accord with the well-known increase or decrase in milk or butter, or both, from a given cow as the direct result of a change in her feeding or other treatment.

Dr. H. P. Armsby, whom I regard as an excellent authoity on this subject, has recently expressed his views admirably, in these words: "The quality of milk which a cow can produe depends upon her breed and individualit, and in this sense, the quality of the mik is more dependent upon breed than upon feed. On the other hand the quality of mik which any given cow will produce is very argely dependent upon her feed." Other god authorities may also be quoted, I believe orrectly, as follows: "The quality of miik is most dependent upon breed." "The deposition by breed will preponderate." "The quality of the milk is mainly dependent upon the breed of the cow but not exclusivly." "If by quality is meant richness of milk, it certainly depends, primarily, upon the breed." "The good cow will give good mik on quite poor feed; the poor cow will give better milk on good feed than on poor, bu always a small mess of comparatively infeior quality."

It may be regarded as a settled fact that every cow has he limit of capacity, both as to quantity and quality, or richness of milk. Beyond this limit the cannot go, and no feeding or treatment on force her beyond it. It does not require mich observation to determine what this limit is and ascertain beyond what point food is wasted if consumed. In the well-bred aninal the limit of possible production is muh farther removed from average product than in a common cow; hence, as a rnle, hghly bred cows can be fed highly with profit. While we speak of a cow being unable to do better than her best, it is true that our cows are seldom at their best—rarely maintained at their utmost limit of production, and st it is generally easy, by some change or inprovement in feeding or care, to get direct results and prove that food does not affect product. The general statement remains true, however, that in the dairy cow breed is nore potent than feed, in determining the product and the profit of the animal.

ENSILAGE EXPERIMENTS.

MR THOMAS J. HUNT, assistant at the Agricultural Experiment Station at Champaign, Ill., has prepared a report on the silo in use at the University farm, and the results obtained with the ensilage corn put in last year. The silo was a room 11 feet 8 inches by 16 feet by 9 feet high, in a barn basement, one side wall of stone, the other three of brick. One wall contained two windows three feet square, and the room had a doorway. These were made tight by means of boards. The walls of this room were raised five feet higher by means of studding and flooring, making the silo 14 feet deep. The floor and the walls of stone were cemented, and a tight joint was made with cement between these and the boards above. The filling of the silo was practically continuous, and was done in three days, August 20-22, 1887, with 54,525 pounds, twenty-seven and a quarter tons of green corn.

Feeding the ensilage was begun March 10, 1888, by mixing it with twice its bulk of dry cut corn fodder, not corn stover, which the stock had been chiefly fed during the winter. The cattle soon learned to like the ensilage, and after the first week it was fed without mixing with any other substance, and was eaten rather better, on the whole, than corn fodder had been previously.

Daily weights of ensilage fed to the stock were not taken. From what weighing was done, it is estimated that from March 17 to April 30, 700 pounds on an average were fed daily. During this time the following cattle were given ensilage:—

March 17th to April 30th, two aged and five yearling bulls, one heifer and one dry cow were fed ensilage, hay and grain; eight milch cows, ensilage, straw and grain; ten dry cows and five heifers, ensilage and straw.

March 17th to April 16th, three steers were fed ensilage and corn.

April 13th to 30th, four heifers and two dry cows were fed ensilage and hay.

It will thus be seen that for 45 days 37 head were, on an average, fed 700 pounds, about 19 pounds each, daily. *Of these, 15 had ensilage and straw only; 8 had ensilage and straw with grain, usually four quarts bran added daily, and 9 ensilage, hay and grain.* All thrived exceedingly well, considering amount of food eaten.

We have not room to quote the full details given; the report closes with the following summary of the conclusions reached:—

1. The yield was not more than seven tons per acre of green corn, or two and one-sixth tons of corn fodder.

2. It required seven men and three teams three days to fill the silo with twenty-seven tons of green corn.

3. Difficulty was found in obtaining evenness of distribution in the silo and, consequently, eveness of settling.

4. Twenty-one pounds of green corn occupied a cubic foot when put into the silo and shrunk one-fourth in volume, weighted with fifty pounds to the square foot.

5. Size of silo desired may be approximated by allowing two cubic feet a day for each animal.

6. With a silo of stone, brick and cement the ensilage rotted at the sides and top to the extent of one-third the entire amount.

7. There is evidence for believing that this loss could be considerably obviated by building the silo of wood.

8. Thirty-seven head of cattle, fed forty-five days on a moderate allowance of corn ensilage with other food, ate the ensilage somewhat better than corn fodder and thrived very satisfactorily.

9. Five yearling Shorthorn heifers, averaging 895 pounds each, were given daily forty-eight pounds of corn ensilage each, ate about seven-eighths of it, and during fifteen days made an average gain of forty-nine pounds each.

10. Analyses of corn ensilage and corn fodder made from similar corn, show a loss in the ensilage of total nitrogen, albuminoid nitrogen and soluble carbohydrates, and an increased per cent. of non-albuminoid nitrogen, ether extract, crude fibre and ash.

11. The fresh ensilage contained 1 per cent. of organic acids, .065 volatile and .035 non-volatile.

12. Ensilage was found to contain yeast and bacteria ferments. Neither from a chemical nor from a biological standpoint is there reason for believing that the ensilage is made more digestible by their action.

SALT FOR WHEAT.

THE question of how and where to apply salt to wheat is asked in a late number of the *Farmer*. I have used salt twice and will give my experience.

The first time I tried applying salt as a fertilizer I applied in the fall, getting the salt in a goood tilth by ploughing and harrowing until ready for the seed. I than sowed broadcast as evenly as possible, intending to use about eight or ten bushels to the acre. I found it quite a task to sow broadcast in this way, but sowed about four acres. After that the wheat was sown with a drill, using five pecks of good seed per acre. The soil, I should have said was a good prairie loam and was in good tilth when the seed was sown.

I paid very close attention to the crop and never could see that any special benefit was received, unless it was in making the straw a little bigger. The yield was no better than on the rest of the field. The next trial I made I sowed the wheat in the fall, preparing as usual and sowing in good season. Early next spring, as soon as the condition of the soil would admit of doing the work, I sowed about six bushels of common salt per acre on about three acres, taking care to scatter as evenly as possible. I am satisfied that this application paid me very well. Not only did I secure an increase yield, but the quality of the grain was noticeablg better. Of course one single experiment in this way should not be regarded as conclusive, yet others who have experimented more largely, report that applying in the spring is the better plan and for this reason: Salt is easily dissolved in water and if applied in the fall, a considerable portion is wasted before the plants are able to derive the benefit. If the application is delayed until spring, the wheat plants have started to grow, and are in a much better condition to take up and use the plant food as it is made soluble by the moisture and soil. So that my advice would be to defer the application until in the spring and then sow broadcast as evenly as possible, using from 8 to 12 bushels per acre, depending somewhat upon the condition and character of the soil. Make a small trial first and see if it pays before investing too heavily.—*Corr. Indiana Farmer.*

POTATO BLOSSOMS.

AFTER repeated experiments to determine the fact in his own mind, the editor to the *Mark Lane Express* advises farmers to cut off potato blossoms as soon as they appear. The ball, or true seed of the potato, which results from the blossom, are not only unnecessary of the formation of the tuber below, but are a prejudical strain on the plant. He says:—

"I have tried it again and again on a large scale—three rows left and three rows cut and the results have more than satisfied me. It stands to reason that the plant which is propagated in acknowledged agricultural economy from its 'budding root stem,' must spend its energies and powers unnecessarily in the production of flowers and seeds which are of no economic value whatever."

THE ONION.

IN answer to the inquiries of a correspondent we would say that onions should be pulled when the tops begin to turn. They are left in the field, in rows, until they are dry enough to permit the tops to be easily removed. It is sometimes necessary to stir these rows. When dry remove them under cover, where it is dry; and they ought to be placed on slatted structures. When kept through the winter, care must be taken to keep them where it is both cool and dry. They should be just kept from freezing, for if the temperature is too warm, they will sprout. Onions are sometimes kept in the field by covering with dirt as you would roots. The dirt is placed on them just before freezing, and when the covering is somewhat frozen it is covered with something, just as we have recommended for potatoes.—*Western Rural.*

STORING CELERY FOR WINTER.

SMALL quantities for family use can be stored in shoe or other boxes, by first boring inch holes four inches from the bottom at each end and side of the box. Turn the box on end, and pack the celery in layers, the narrow way of the box. To each layer of celery in position sprinkle over the roots only enough earth to mulch them well. Continue until the box if fulls. When you set the box down shake or jar the box to settle the dirt among the roots of the plants. Then take the watering pot with nozzle and pour water through the auger holes in the ends until the soil is thoroughly saturated and 'tis done. The box can be set in any convenient niche of the cellar, and only needs occasional watering (always through the auger holes) to have a supply of crisp tender celery at short notice, without the trouble of grubbing in the frozen ground and exposing both yourself and the whole lot of celery in the trench.—*Orchard and Garden.*

EGGS FROM DIFFERENT BREEDS.

SAYS the *New England Fancier*: A correspondent who has taken the time and trouble to keep a record of the number of eggs laid by the different breeds in his possession during the past year, reports to us as follows under date of August 1st:—

Bantams—sixteen to the pound, ninety per annum.

Polish—nine to the pound, 125 per annum.

Hamburgs—nine to the pound, 150 per annum.

Legorns—nine to the pound, 160 per annum.

Black Spanish—seven to the pound, 140 per annum.

La Fleche—seven to the pound, 130 per annum.

Plymouth Rock—eight to the pound, 150 per annum.

Houdans—eight to the pound, 150 per annum.

Black, White and Buff Cochins—eight to the pound, 150 per annum.

Dark Brahmas—eight to the pound, 120 per annum.

From the above it is easy to see the folly of selling eggs by the dozen; why don't our granges unite in demanding that eggs be sold by the pound as the custom is already in California.

THE HOME IN WINTER.

MAKE home as cheery as possible, it is the only heaven we will enjoy this side of the grave. Not only must we do our utmost to be affectionately disposed one toward another, but to exhibit our love by our anxiety to make all as comfortable and happy as possible. Are the windows tight and free from draft? Will the doors close, the latch catch and so prevent the ingress of cold when it is not wanted? Ventilation is good in its place but there are proper ways of securing fresh air without cracks, crevices, and openings, at every window and door. Many a cold and much rheumatism and other sickness may be avoided by a little attention to these things now. Paint used now retains its colour and otherwise lasts longer and better than if put on in the heat of summer. Rooms not papered may be made more cheery all winter if whitewashed now. The roofs and clapboarding can be examined and repaired to advantage. Cellars need to be cleaned out, and the doors and windows looked to. These are but a few of many suggestions that might be offered to the men who love to make their homes comfortable and pleasant, and their wives and children healthy and happy. Health follows happiness much more closely than we imagine and it is these little deeds of kindness, little words of love, that make our earth an Edan like to that above.

DIPHTHERIA FROM THE CELLAR.

I COULD not understand why that entire family of seven children should be stricken with putrid diphtheria till I had occasion to go into their cellar," a friend said who had been summoned to help care for the sick and dying children of a neighbour.

"We always thought the Wrights, with their trim, whitewashed fences and outbuildings, their neatly kept dooryard and garden, the evident constant warfare against filth and slatternliness in any form, the most intelligent and cleanly of families in our community, and I wondered what possible breeding place for malignant diphtheria could lurk about that home, till I went into the cellar. When I opened the stairway door a horrible stench of decaying vegetables and tainted brine rushed up from the unventilated, loathsome pit below, that they call cellar. The air was so heavy with mould and stagnant impurities that the flame of the candle I carried flickered and flapped over, as though a weight had been laid on it.

"Hardly had I stepped from the bottom stair, before my feet struck a slippery, slimy chute of rotten pumpkin, and I went down into the dreadful mush that sent out its pestilential whiffs from the very depths of its putrefaction. The candle still burned, and after hastily rising from this unexpected tobogganing across the cellar bottom, I held the sickly flame high and low, scanning well that breeding nest of diphtheria and other fearful germs, before cutting the slices of salted pork, for which I had been sent to bind upon the poor little, swollen, choked throats upstairs.

"Walls, green with mould and fungi; decayed and decaying vegetables everywhere; a slosh of rotted apples oozing their pungent juices from the bloated staves of a dozen barrels, a great bin of frozen, then thawed, potatoes, that to stir meant development of gas, powerful enough to run an electric plant if odour is power. Under the stairs a heap of pumpkins had been stored in the late autumn, that decaying bloat—months before—had hoisted and rolled apart, some of the mushing, sliding spheers falling directly in the pathway and making the slippery chute that had unbalanced and mired me; and in every corner putrefying stacks of turnips and cabbages sending out their penetrating loathsome breaths.

"The cellar was as dark as a coal pit, the little three-pane light under the dining-room windows being buried under the winter banking that late May still found uncovered. The gases and stagnant air, thick with dreadful odours and disease germs, had no outlet of escape from the cellar only by stealthily filtering through every possible cranny and seam of the heavy timbered ceiling into the living and sleeping rooms overhead, and by strong rushes up the stairs whenever the opening cellar door stirred a current upward."

And still those parents wondered why their seven young children, whom they thought to cherish and protect from every harm, should be stricken with diphtheria, and called it one of the most mysterous of God's providences when they were called to lay two of their darlings under the sod.—*Clarissa Potter in the Housewife.*

COMMON SENSE ABOUT COWS.

I KNOW a cow, of no particular breed, now fourteen years old, which in her prime made fourteen pounds of butter a week in June, and a proportionate quantity the remaining months of the year. She gave milk at two years old, went farrow the next year, being in new milk every year since until this year; is now farrow, and will go to the butcher next year, because it is not thought advisable to keep a cow beyond this age. She never knew what it was to be hungry; has access to salt at all times, with plenty of water; is never forced, having nothing but her pasture in summer, and in winter never more than six quarts of meal a day (generally corn and oats) with roots (usually potatoes) and cornstalks or hay, and a run at the straw stack through the middle of the day, unless it be too stormy, then she is foddered in her stable.

Of her calves, her heifers are as good milkers as herself, her steers make good beef cattle, and all are as tractable and docile as herself, all being treated with the same consideration. Perhaps one farmer in a hundred is able to keep pure blood of whatever breed his fancy may dictate, and such a farmer is a boon to his neighbourhood; but the ninety-nine must be content with what they have. Their success lies in making the best of everything in their hands. Let these farmers breed to the best they can afford, of course, but let them take as good care of their inferior stock as they would of thoroughbreds, and mark the result. To the gook food and warm shelter let them add the currycomb and brush; exact kindness of their hired help in their care; and in a few years they will be as proud of their stock as the neighbour of his thoroughbreds, and in most ways they will bring just as good return, without that heavy expenditure which the ninety-nine cannot afford. — *Amelia Louise Smith, in N. Y. Tribune.*

BUTTER OR BEEF?

WHAT does it cost to make a pound of butter or a pound of beef? I don't know exactly, but it may be well to compare the relative cost of each. For comparison I will take a good steer and a good cow, each weighing 900 pounds, and the time the first of May, the cow being "fresh" and the steer "thrifty." The cost of feeding I will call the same for each, though I think the steer would complain if restricted to the cow's rations in winter. Having never fed steers through the whole winter, I am not certain what increase to give the steer for the summer months, but will put it the same as for the winter, say 300 pounds, making 600 pounds for the year. When I was fooling with beef I thought an average gain of 300 pounds per head was doing pretty well, and some feeders did better than that; more did worse. The cow will give 300 pounds of butter and a calf as her dividend for the year. The steer 600 pounds of beef. The cost being the same, which paid the best? The cow and I figure it out this way: For the past year in the Baltimore market the best beef hos not averaged over 5c. per pound; 600 pounds of beef at 5c. is \$30. 300 pounds of butter at 25c. is \$75; the difference is just \$45. "Yes," you say, "but you have left out of the calculation the gain in price of the original 900 pounds." That's so. I will call it one cent per pound, which is too liberal in these times. Deduct this \$9 gain from the \$45 difference in favour of the cow, and it leaves \$36, which is exactly the original cost of the steer, calling it worth 4c. per pound. "But you have got to milk the cow every day." Yes, Sunday too, and have got to set the milk, skim off the cream, ripen it, get it to the right temperature, churn it, work the butter, and sell it. It makes you tired to think of all this work, don't it? Well, the \$36 will help rest you. Now, my friend, hold on awhile; we are not done with our calculations yet. You were afraid I would forget the gain on the cost of the steer, and at the same time you forget some items in favour of the cow. I will suppose you are farming for a living and went to increase the fertility of your farm. That is one reason you feed steers, *isn't it?* You get the manure from your steer and I get it from my cow, and if you claim that the steer manure is the richest, then it is because you have fed it more feed than it can digest, and you must charge it with more cost of keep. But if you are willing to put it the same as the cow's I will allow one to balance the other just for comparison only, as I claim that the cow's manure is richer than the steer's because she does not take out as much nitrogen from the food. Well, we will say the manure account is even. Now you have sold from your farm 600 pounds of meat with all the nitrogen and phosphoric acid that amount of beef implies. I have sold 300 pounds of butter, which contains none of the farm's fertility. I think I am ahead here. Your steer is gone and you have got to run the risk of replacing him with one as good, and this is an annual risk, while I still have my cow. I also have an extra scrip dividend in the shape of a calf, which is worth, if a heifer and from a registered sire and dam, from \$15 to \$30; if from a grade cow by registered sire \$10; if a bull calf and a grade, what it will bring for veal. I am not quite done yet; I have all the skim and buttermilk, which will make veal or pork; I get weekly cash returns, while you have to wait a whole year before you see your money, and then you don't see much. I can sell poultry, eggs, fruit, etc., to my butter customers when I go to town, but you can't sell "a few" of these things because it won't pay you to "hitch up" especially for that purpose. There is one cow item I have purposely left out and that is the value of the old cow for beef. This need not be considered at all, or if so don't let its consideration influence you on getting a big cow, thinking you will get your reward in the end. Would you get much profit in feeding a steer for eight or ten years? No. Then the extra weight of the cow will pay you no better. Still the old cow will bring something, even if she is small, and the cash received may go toward paying for axle grease, mending harness, etc. But always leave it out of your calculations about good butter cows; the butter will pay for feed, care and cow.—*A. L. Crosby in Nat. Stockman.*

AN OLD STORY,

But It is Good Enough to Bear Telling Once More.

"Bill wuz old Jedge Hiram Cadwell's oldest boy—you recollect the Cadwells—used to live on the toll road near the cemetery. Old Jedge Cadwell wuz about ez shif'less a man ez I ever see, but Bill had a great bizness head—calc'late he must hev inherited it from his mother, who come of the finest stock in Hampshire county. When he wuz a boy Bill wuz always tradin' an' swoppin', an' I s'pose he started out in life with more jackknives than 'd stock a store. An' Bill preserved in manhood all them talents which he exhibited in youth. Whenever you met a man 'at looked ez if he'd been run through a sieve you'd feel mighty safe in bettin' that he'd been havin' business dealins with Bill Cadwell.

"One day Bill came into Eastman's store an' allowed as how he'd be powerful glad to git a knittin' needle—his wife wanted one, he said.

"'Mr. Cadwell,' sez Eastman, 'a knittin' needle will cost you jest 1 cent.'

"Bill looked kind uv surprised like, an' sez: 'Knittin' needles must hev gone up sence I come in fur one last winter.'

"'Wall,' sez Eastman, 'after payin' freight an' one thing an' another I can't afford to let knittin' needles go for less 'en a cent apiece.'

"Bill didn't say anything fur a minnit or two, but after lookin' out uv the door at the scenery he turned round an' sez: 'Look here, Mr. Eastman, I tell you what I'll do; I'll trade you an egg for a knittin needle.

"Eastman shook his head. 'Why not?' sez Bill; 'you don't suppose 'at a darned old knittin' needle is wurth as much ez an egg, do ye?'

"'I never heerd uv anybody payin' freight on hens,' sez Eastman; he wuz the most sarcastic cuss in the township, Eastman wuz.

"'No, nor I never heerd uv feedin' knittin' needles,' sez Bill; 'it don't cost nothing to raise knittin' needles.'

"Well, Bill an' Eastman argued an' argued for more'n an hour about hens an' knittin' needles an' things, until at last Eastman give in an' sez:—'Wall, I s'pose I might jest ez well swop ez not, although I hate to let anybody get the advantage uv me.' So Eastman give Bill the knittin' needle and Bill give Eastman the egg.

"But when Bill got to the door he turnt round an' come back again an' sez:—'Mr. Eastman, ain't it the custom fur you to treat when you've settled with a customer? You an' me hev had our dispute, but we've come to a settlement and an understandin'. Seems to me it would be the harnsome thing for you to treat.'

"*Eastman didn't see it in just that light*, but Bill hung on so an' wuz so conciliatin' that finally Eastman handed out a tumbler an' the bottle o' Medford rum.

"'I don't want to seem particular,' sez Bill, pourin' out half a tumblerful uv the liquor, 'but I like to take my rum with an egg in it.'

"Now, this come pretty near breakin' Eastman's heart. He hed laid the egg on a shelf behind the counter, an' he reached for it an' handed it to Bill, sayin': 'Wall, I'm in for it, an' there's no use ov kickin'.'

Bill broke the egg into the rum, an' lo an' behold, it was a double yelk egg! Gosh! but Bill was excited.

"'Mr. Eas'man,' sez he, 'you've been a takin' an edvantage over me.'

"'How so?' asked Eastman.

"'Why, this egg has got two yelks.'

"'What uv that?' sez Eastman.

"Well, simply this,' sez Bill, 'that if you're inclined to do the fair thing you'll hand me over another knittin' needle.'"—*Chicago News.*

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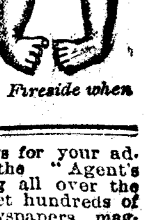

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