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## The Field.

### The Destruction of the Sugar Maple.

One of the leading maple sugar makers claims that but very few productions, in the entire system of New England agriculture, realize to the farmer so large a profit as the manufacture of that commodity. As prices have averaged for the last ten years, it is certainly a feature of home industry well worthy of consideration. Many of the farmers on the hills who own and utilize large sugar orchards have become convinced by practical experience, that it is one of their very best paying harvests, and, of those yielding, perhaps, a greater net profit. Nature has appointed this harvest at a season when the farmer can accomplish but little labor to advantage, and unless he is engaged in this occupation, his time and efforts will yield him but little remuneration; yet, without taking this point into account, even did the work come at any other time in the year, it would pay grandly. Maple syrup and sugar hold a high price in the market, and without a doubt will sustain their present rates, with probabilities of advance in the future. In the face of these facts, it is certainly somewhat of a mystery why a large proportion of farmers should manifest such an utter indifference to the preservation and perpetuity of the sugar maple. In no other part of the country does it flourish so naturally and vigorously as among the eastern mountains; and wherever its delicious sweets are extracted, it repays the owner three-fold for the labor. Still our maple groves and forests are rapidly disappearing, and at the present rate of decrease, another half-century will witness their almost utter annihilation. The process of making maple sugar is evidently destined to become one of the "lost arts" unless some special interposition stays this work of destruction. The demand for broom-handles and other articles of utility, into which the wood is converted, is insatiable. Thousands of our grand old emerald-crowned monarchs of the forest are sacrificed to this demand annually, and of course the aggregate amount of sugar manufactured must decrease in ratio with the decrease of the material from which it is derived. It will soon become a luxury in the market, commanding a price that must teach every shrewd and sensible owner of maple orchards the expediency, even in a pecuniary sense, of preserving this beautiful feature of New England landscape. By all means, then, let our maple forests escape the invasion of that dire energy and cupidity, which are so rapidly and recklessly dismantling our lovely hills and valleys of their primitive grandeur and luxuriance. The maple-grove once destroyed, cannot easily be replaced. Its reproduction is the slow, lingering work of time; and it behoves the lumberman to remember this important fact when he puts the axe to its root. The perpetuity of the delicious luxury obtained from the sugar-maple is not the only incentive to the preservation of that tree. In a pictorial sense alone, with its wealth of unparalleled greenness and verdure in summer, and its marvellous mosaic of leafy glory in autumn, it is worthy of a wonderful immortality.—*Concord Patriot.*

### Soils and Manures.

There is a good deal of common sense in the following remarks by a correspondent of the *Country Gentleman*:

Do manures on light sandy loam lands leach down below the roots of plants and become lost and wasted in the lower strata of subsoils? Or is this tendency in an opposite direction, and in dry, hot weather do they become absorbed and lost in the air?

I think neither of the above propositions points out the true tendency of manures applied to such kinds of land. My idea is that they remain in the soil where they are placed, and their only tendency is towards the roots of the plants, thereby constituting the food element upon which these plants feed. I believe that by a regulation of nature there exists an affinity between plant food in the soil and the roots of the plants themselves, whereby they are constantly drawn towards each other. I can not see how this arrangement can be broken up by the action of the wind or the sun, or by the influence of heat and dry weather on the other. For if during rains the manures these lands contained were subject to leach down, like water running through a sieve, they would soon pass beyond the reach of the roots of every kind of plant. Or on the other hand, in hot, dry weather, if their tendency were upwards, like the steam from a boiling pot, their strength would soon become absorbed by the air, and mingling with it would be scattered to the winds. And these lands, being constantly subject to the wasting power and influence of these elements, must a long time ago, if they ever possessed any fertility, have become very poor, desolate and barren indeed, beyond the hope of recuperation.

Put on the contrary, there are thousands of acres of this kind of land at present covered with a heavy growth of wood or timber, thousands more in pasture and mowing fields, and under cultivation by the plough and hoe, and annually bearing very satisfactory crops; and still other acres of this kind of land that by skillful and persistent cultivation have become one of the richest and most productive lands in the world.

My idea is that the rains, the heat and dry weather, as they ordinarily occur one season with another, do not come to these lands as enemies, but as friends, to help nature to elaborate the plant food of the soil and carry out her kindly influence in the increase and production of growing plants. And though sometimes her operations may seem to be suspended, as during the severe drouth that prevailed for two years previous to last spring, yet we saw, after the rains came, that the lands which during that time looked so poor and barren, instead of parting with any of their plant food during those dry years, had actually been laying in an additional new and fresh supply of fertility, as is evident from the abundant harvest and the rich mantle of green that clothed the earth the past year.

### Thorough Culture.

A correspondent of the *Cincinnati Gazette* writes: In 1869 I had a field of sixteen acres of like fertility. I expected to plant half the field in corn, but for some reason I did not. In the half that had been ploughed for corn after the ground had been broken, the weeds grew more rapidly. Consequently, I broke it again the 20th of June. On the 1st of September following, I ploughed the entire field, and sowed in wheat.

The result was as follows: The half which had only received a single ploughing, yielded per acre 13 bushels and 18 pounds; the half that received three breakings yielded per acre 23 bushels and 40 pounds, which made a difference of more than 10 bushels per acre! At one dollar per bushel, this would pay for the extra ploughing and leave a net extra profit of six dollars per acre besides.

### Application of Manure.

M. L. Goodale, of South Amherst, Mass., writes his experience as follows to the *New England Farmer*: "On my warm, sandy loam, I plough in my long manure, for corn, not very deep, so that when I plough deeper in the fall and spring, when I seed the field to grass, the manure will be brought up nearer the surface and mingled with the soil. Thus prepared, the seed will catch better, as the manure will be well decomposed. I never have failed of having good crops when I have managed in this way, if I manured well and tended my crops properly. My theory is that, if I spread coarse manure on warm, dry land, it will dry up, and the strength of the manure or the ammonia will go off in the air, and come down on the farm of somebody else, on a rainy day. As a general thing I plough my most heavy soil in the fall, as late as I can before it freezes up; believing that in this way a good many worms are killed by freezing. On this land I put fine compost of manure and muck or loam; harrow it in well, to get the soil and manure thoroughly mingled together; then furrow about four feet apart, put a shovelful of good compost of muck and hog and horse manure in each hill, and tend well. I begin to plant by the 10th of May, if the weather is suitable. I have had good corn, managed in the way described, where I had a good sward to turn under. This moist land should be ploughed deep in the fall, so as not to plough so deep when I want to seed, for the season that it will cover the manure too deep for the seed to catch well. If the turf is not all turned by the last ploughing, the grass-roots will find it in time. I have ploughed moist, loamy soil land the first part of September, for winter wheat; put on about twenty cords of fine compost manure to the acre, made of about three-fourths of muck and one-fourth of barn-yard manure; sow a bushel and a half winter wheat; harrow in wheat and manure together, and get from ten to fifteen bushels good wheat per acre; seed at the same time to herdsgrass, and sow clover in the spring and bush in well, and get two or three good crops of grass or hay. I think I can improve my land faster in this way than I can to plant it to corn, for it will not take as much manure to keep it up. Corn is an exhausting crop, and does not bring price enough to pay for raising. Last spring I ploughed land with a good swivel plough; put in the hill a part of a shovelful of three-fourths muck, one-fourth hog and horse manure, and had a good yield—from twenty-five to thirty-five bushels of corn per acre—

with no other manure. Last fall I ploughed some land for oats. I intend to put on, say, ten or twelve cords of fine composted manure to the acre; harrow in oats, manure, and seed together. The seed will catch well, and I shall expect two or three good crops of hay. I have managed in this way, and have had good success.

**Gypsum for Potatoes.**

In the region north and west of Boston, and not so far from the city that the farmer cannot go and return with a load on the same day, the early potato crop is a source of large income and fair profit. The potatoes are planted as early in April, as the soil can be made fit to receive them, and taken to market when they are sufficiently large for the table, whether ripe or not. Some of the earliest are sent in the latter part of July, and the bulk of them in August. This is the harvest season for this crop, and occurs before potatoes are brought in from Maine and Vermont. The demand for them at that period is always quick, and at a paying price. Under these circumstances, it is an object for the farmer to get the crop matured at the earliest moment, as one bushel in July will usually fetch as much as two bushels will in September. In order to secure this, various plans are adopted to start them early, such as sprouting them in baskets by the kitchen stove, or placing them in sheltered and sunny places on layers of horse manure, until the germ has pushed out a fourth of an inch, when they are carefully planted. After a thorough preparation of the soil, no application of what is termed special manure, seems to have so favorable an influence on potatoes, as that of gypsum or the common plaster of Paris. Gypsum is made up of

Sulphuric acid	43 parts
Lime	21 "
Water	24 "

From the numerous successful experiments made by the application of gypsum, it is quite evident that the sulphuric acid and the lime contained in it are highly favorable to the growth of the potato. They tend to keep the potato from rotting, as many fields have given sound crops when dressed with gypsum, while others in the immediate neighborhood have been injured. Indeed, on the same field, where gypsum was omitted, the rot occurred, and where applied, the crop was not affected. The usual mode of application is to scatter a single handful about the root in the hill. Several distinguished chemists found that the presence of gypsum retarded putrefaction. Liebig contends that the nature of gypsum consists in its giving a fixed constitution to the nitrogen, or ammonia, which is brought into the soil, and is indispensable for the nutriment of plants. He says that 100 pounds of gypsum give as much ammonia as 6250 pounds of horse's urine would yield.—*New England Farmer.*

**The Action of Frost.**

The most fertile and productive regions are those where the frost penetrates the earth deeply and exerts its influence during a considerable portion of the year. The action of the frost is a powerful stimulant of the soil. It disintegrates it, and unlocks the closely combined elements and thus acts free vast quantities of plant food. Its action also counteracts the compressive force of rains and the tread of teams and other animals, and so each year lifts up and lightens the compact earth. With frost to aid, the farmer need not plough and cultivate so much, to put the soil in good condition as when this element is not operative.—*Farmers Union.*

**Exterminating Mustard.**

A large portion of the seed will shell and fall to the ground before any cultivated crop can be removed from the field. Then, if the ground be harrowed thoroughly, soon after a crop of grain is removed, almost every mustard seed will germinate, grow, and the plants will die after the weather has become so cold as to freeze the ground. When the land is ploughed in autumn, all the seed that is buried over one inch deep will remain in the ground for an unknown number of years; but as soon as it is turned up to the surface, where the kernels are covered with only a brushing of soil, every one will germinate and produce a plant. If the seed be allowed to remain on the surface of the ground undisturbed until the following spring, every kernel that is covered with only a thin covering of mold will grow.

As soon as the growing season has commenced let the ground be harrowed. All the mustard seed near the surface, will then germinate. As soon as the young mustard appears in the seed bed, let the land be harrowed again. The harrow will root up and destroy every plant in the seed bed, and will bring much seed near surface, which will immediately germinate. By this practice some ground may be divested to a great extent of these pernicious weeds before the seed for a crop of grain is put in.—*Prairie Farmer.*

**Potatoes.**

Jonathan Talcott of Rome, writes to the *Journal of the Farmer*: All early potatoes should have richer land than the later varieties, as they have less time to grow in, and therefore require greater nourishment while they do grow to mature a good crop. The Peerless has rotted badly two years out of three on my farm, and is not nearly as good for the table as the Early Rose, in fact, it is not good enough for me to eat when better can be had for the growing. The Prolific is very hardy but not up to the standard for the table. The King of the Earlys is a better potato than the Early Rose with me for the table, but not so good a yielder, it must stand second best. I have tested the Idaho, the Late Rose, Campbell's and Thorburn's, but of all the various sorts, I think Campbell's the poorest, and I have cultivated some twenty to thirty varieties yearly for a number of years past, and from them all have selected the Early Rose for an early potato and the Excelsior for a late one; have cultivated the Excelsior the past four years; it will yield nearly as well as the Peerless, some years quite equal to it, and is uniformly the best table potato I have cultivated in the past ten years, cooking dryer, and of better flavor than any other potato I have had in that time.

**Avoiding Spring Frosts.**

The manufacture of artificial clouds is reported to have been resorted to in the French wine-growing districts, to protect the crops from frost. The receivers, filled with a peculiarly prepared tar, were disposed over an area of many acres, and when the tar was gone, thick white clouds rose in the atmosphere, and spreading out evenly over a large region, remained suspended several yards above the soil. In seasons when it is feared, the tar clouds would interpose between the crops and the sky, thus checking the night radiation which often causes such ravages in vineyards and gardens both in spring and harvest time.—*La Revue Agric.*

**Long Furrows in Ploughing.**

A German agricultural journal prints a plea for long furrows. The turning of the plough and the commencing of a new furrow require more exertion in the ploughman and the team than continued work on a straight line; and how great may really be the loss of time from frequent interruptions in short turns may be shown by the following calculations: In a field 225 feet long, five and a half hours out of ten are used in redirecting the plough; with a length of 575 feet, four hours are sufficient for the purpose; and when the plough can proceed without interruption for 800 feet, only one and a half hours of the daily working time are consumed.—*Er.*

**Burned Clay as a Fertilizer.**

A correspondent of the *Tennessee Advocate* says that he sowed a field of sixty acres to wheat in 1855, and ploughed it in with turning ploughs. The yield was eight or ten bushels per acre. In sowing, some grains of the wheat fell on an old kiln, among the brickbats and burnt earth, and produced from thirty to eighty-two heads to the stool; the one that had eighty-two heads averaged forty grains to the head, which made 3,280 grains from one cpe grain. He mentions this to show the effects of burnt earth as a fertilizer, which he claims is cheaper and more available to most of our farmers than any of the commercial fertilizers.

**Seeding Land.**

If you have any land to sow down this spring, suppose you try a part of it without grain. This practice seems to be gaining favor wherever hay is of more account than grain. If you have a rich, moist piece of land that ought to be made to produce two or three crops of hay in a season, try orchard grass, at the rate of two bushels of seed to the acre, with eight or ten pounds of clover and a bushel of June grass. This is heavy seeding, but if you will manure liberally you ought to get heavy crops of hay.—*N. E. Farmer.*

**Agricultural Implements.**

**SEED DRILLS.**

The Seed-Drill, as its name implies, is intended to supersede "broad-casting" or sowing by hand. Its advantages are clearly indisputable, and the main reason why it has, in some cases, failed to receive the hearty adoption of excellent practical farmers is, that until within a comparatively recent date it has never been practically applied or adapted to the different requirements of seeding. Now, however, this defect has been fully remedied, so that one and the same implement may be readily and profitably applied to the sowing not only of wheat and the other finer cereals, but also to all the coarser grains as corn, peas, oats, beans, &c., &c.; and likewise to the various fertilizers, as plaster, lime, ashes, guano, superphosphates, bone-dust, salt, &c., &c., either dry or damp.

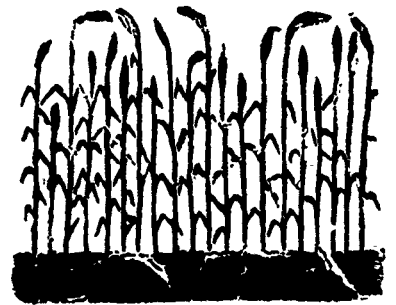
The principal advantages derived from sowing by drill may be briefly summarized as follows:—

- 1st. The seed is delivered with regularity.
- 2nd. It is deposited at a uniform and proper depth.
- 3rd. Weeds, during the growth of plants, are destroyed with greater facility.
- 4th. The plants cultivated receive the undivided benefit of the soil, and have not to maintain a constant struggle with weeds.



Drill-Sowing.

- 5th. By the admission of the sun and air between the rows a stronger and healthier plant is produced, and of course a heavier crop.
- 6th. By stirring the soil it is more susceptible of benefit from the atmosphere—imbibing more oxygen and being warmed and enriched by the sun.
- 7th. The soil being pulverized, the roots shoot out more freely.



Broad-Cast.

- 8th. Clover and grass seed answer incomparably better in the pulverization produced by hoeing.
- 9th. The grain, being put into the ground at a proper depth, the plants are not exposed to injury by drought.

In addition to these considerations there is another, viz., that the seed is invariably covered, whereas in hand-sowing, a considerable quantity is left wholly exposed and consequently wasted. And from this fact another follows, which has been verified by experience.—that 25 per cent. of seed is saved by the

drill, and the yield is believed to be from 10 to 15 per cent. more than by the usual modes.

Running the drills north and south, also, when practicable, secures another advantage in giving free access to both sun and air, and thus in a great degree checking the tendency to rust.

Hand-drills.

The earliest kind of drill worth mentioning took the form of a hand implement, many of which are still doing excellent service, having been brought to a high degree of perfection. Indeed some of them will perform all the varieties, though, of course, not the quantity of work which can be done by their larger rivals.

Amongst the best of these now in use in Canada are the "Wethersfield," the "Planet Regulator," and the "Planet" seed drills.



FIGURE 1.

The first of these is simple and cheap, easily operated, and marks its own row; opens the drill; drops, covers, and lightly rolls the earth upon the seed. It also sows any kind of seed with regularity. It is provided with a "marker" for marking the next row. The cover can also be adjusted to cover the seed more or less at pleasure.

The roller leaves a ridge over the seed, and the cast-iron reeds, by which the implement is worked, being of various sizes, may be easily changed for different kinds of seed.

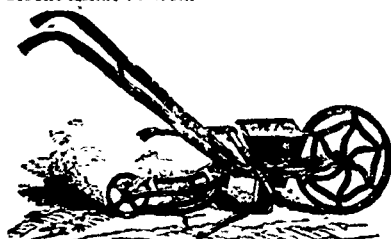


FIGURE 2.

The second of these, the "Regulator," will perform all the work of the other, being specially adapted for turnips, peas, beans, sage, carrots, onions, &c. The seed-conductor being enamelled white on its inner surface, the operator can see at a glance how the seed is being dropped, and thereby prevent any failure in sowing.

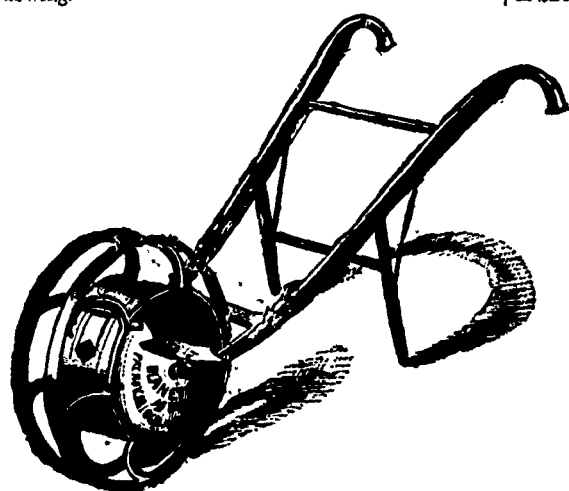


FIGURE 3.

The third, viz., the "Planet Drill," is manufactured in four different sizes, numbered 1, 1½, 2, and 3; the first two holding three pints of seed, although they will work perfectly with a quarter of an ounce. They weigh about 20 lbs., and are very convenient for garden use or for field purposes, when sowing is to be done on a small scale.

No. 2 holds four quarts of seed, yet operates well with half an ounce. It performs all the varieties of work of Nos. 1 and 1½, but on a larger scale; weight about 40 lbs.

No. 3 holds half a bushel of seed, and in addition to its seed-sowing qualities, is especially devised to sow guano and other fertilizers.

Hand Broad-cast Sowers.

"Broad-cast" sowers are also sometimes used, though the advantages they possess over common hand-sowing can be considered only as regards quantity, not quality of workmanship.



FIGURE 4.

One of these, called "Cahoons," consists of a light sheet-iron frame-work, surmounted by a hopper or common canvass bag, which will hold between one and three pecks of seed. The implement is suspended by a strap from the operator's neck, and retained in its position by another round his waist. The grain falls through an opening between the hopper and frame-work, (which can be lessened or

widened to graduate the quantity per acre, and the discharge takes place through a flanged spout, which is rapidly rotated by turning a crank. The seed is thrown forwards and sideways to a distance of from 10 to 20 feet from the operator.

A good grass seed-sower of this character is made of a long wooden box, partitioned off into sections of from one to two feet, and is operated by a small lever handle which is easily regulated to sow any desired quantity of seed per acre. See Figure 5.

It is suspended by straps which cross over the shoulder and is borne against the breast. All these implements are easily obtainable from most manufacturers throughout the country. Hand implements were soon followed by horse drills, the main objection to which was that for a time at least, they were applicable to the sowing of only certain kinds of seed. An erroneous impression prevailed that an implement which could sow one kind of grain well, should sow all others equally well, with the same distributor.

Experience however soon demonstrated this idea to be impracticable—that whilst a drill might sow wheat or rye, for which it

was specially adapted, uniformly and well, it failed utterly when used with peas, corn, and the other coarser grains;—often crushing or breaking the seed—whilst no reliance could be placed upon its uniformity of work. This defect however, as we have already noticed, has now been most completely remedied, so that by the internal arrangements of the implement itself, and by other attachments it will in fact sow anything.

Horse Seed-drills.

Several different styles of the horse seed-drill have been in use both in this country and the United States, with varying success; amongst which may be mentioned the iron cylinder drill with brush drop—an implement which not many years ago took a leading position. Yet, like nearly all its contemporaries it was essentially deficient and open to censure upon certain important points. For example, it gave no positive assurance that the seeding of coarse grains was performed with accuracy, either as to the quantity distributed per acre, or the uniformity of distribution. It was faulty in its liability to become worn in such manner as to sow irregular and excessive quantities of seed; and it performed with but little satisfaction the seeding of spring grains—one of the most important requirements of a good drill. Improvements upon the "iron cylinder" followed each other rapidly after the invention of the "double distributor" and the adaptation of other attachments to the grain drill, so that it has now become in fact the most important implement that can be used on a farm. But our space is already filled, and we must reserve a full description of the various horse-drills for our next number.

How to Select a Good Plough Share.

How common it is in ploughing times to hear such complaints as this; "That last share lasted no time; it just wore away to nothing," and "my shares crumble away before they are half worn out." Well my friend in the first case your iron was too soft, and in the second, far too hard.

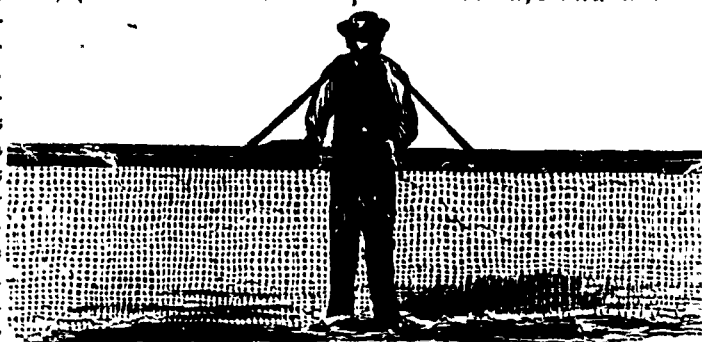


FIGURE 6.

Now there are three ways of picking a good share. 1st, by sight; 2nd, by feel; and 3rd, by sound. Have you got a good share now? If so, mark it; break it when you are done with it, and note its colour;

or suspend it and strike it with a hammer noting its sound, and select your next one accordingly. In a hard share the iron is much whiter than in a soft one. This is a rule:—the whiter the iron is the harder the share, and vice versa. Again, the ringing sound of shares when suspended and struck, varies over several full musical notes. So, if you know anything of music, you can select your share by your tuning fork. This gives us another rule, viz: the sharper the ring, the harder the metal, and vice versa.

Another unfailing method is by the feel,—thus: select the thickest part of the share, and run your finger over the surface of the implement at that place. If the metal is hard you will perceive an evident lack or hollow over the thick part; if not hard, this hollow will not be observed.

In selecting a share by sound, the ring should correspond with that of a steel saw blade.

Hay-mows should always be well ventilated; and unless ventilation is otherwise provided for, hay barns should not be battened.

## Grasses and Forage Plants.

### Value of Roots.

Mr. Alfred Sibson, Professor of Chemistry, at Cirencester Agricultural College, alleges that the value of roots varies extremely according to the nature of the soil, the season, and the mode of culture. Large roots, especially turnips, generally contain more water than moderate-sized ones; some very large ones examined a few years ago contained as much as 91 per cent of water. A portion of the interior of each of these roots was decayed, although the exterior was quite sound—a circumstance not uncommon with large turnips. The sound portions of such roots, moreover, generally have a woolly structure, in which the more valuable components of food are deficient. On the other hand, small roots generally contain much woolly fibre and, comparatively, much nitrogen; but as the latter occurs partly in the form of incompletely developed albuminous compounds, it fails to exercise the full benefit of flesh-forming material—a result also, perhaps, partly to be attributed to the disproportion of nitrogenous to carbonaceous compounds.

Thus moderate-sized and well-proportioned roots, such as are obtained by careful cultivation and skilful manuring, not only yield, by proper management, the greatest weight per acre, but are also, weight for weight, of much better feeding quality than the foregoing, or those otherwise badly grown. Such roots always contain a considerable proportion of sugar, for the elaboration of which, during the latter stage of growth, a healthy development of the plant through its earlier stages seems to be most necessary. Hence plants which from late sowing or otherwise, are too backward to gain the full advantage of the summer weather, seldom elaborate much of this valuable feeding compound, and are consequently of inferior value as food.

### Improvement of Grass Lands.

Thousands of meadows and upland pastures are producing less than half the quantity of hay and feed which the land is capable of, from a deficiency of plants of those kinds which are most productive and suitable for the soil. In some cases, where the pasture is very foul with weeds and moss, it is advisable to pare and burn the old sward, and re-sow the land entirely as above directed. In some other instances it may be desirable to drain and manure the land; but in most cases great improvement can be effected by merely sowing renovating seeds (which should consist of the finest and most nutritive kinds of perennial grasses and clovers), in the following manner:—"Heavy harrows should be drawn over the old turf early in the spring, to loosen the soil for the admission of seeds, which, if sown freely, will occupy the narrow small spaces between the grasses already growing, and supersede the coarse grasses and mosses. After the seeds are sown the land should be carefully rolled. It is a good practice to sow these seeds at the same time as the top-dressing if any is applied; but this is by no means necessary. The months of February, March, and April, are proper for sowing the seeds; the earlier the better, as the old grass will protect the young from frost. It is also useful to sow in July and August, immediately after carrying the hay. Should the old turf be very full of moss, this is generally an indication that draining would be beneficial. The following is, however, an almost infallible remedy for moss, not only destroying it, but preventing the growth in future. Mix two cart-loads of quick lime with eight cart-loads of good light loam, turning the compost several times, that it may be thoroughly mixed and the lime slaked, and spread this quantity per acre over the pasture, dragging the turf well with iron harrows."

### To Seed a Bush.

A correspondent asks us what is the best way to seed a bush. Much of course depends on the quantity of growing timber on the land proposed to be seeded down. If the trees are close enough to produce perpetual shade during the summer months, grass for feeding purposes cannot thrive. Where the trees are far enough apart for the greater portion of the soil to receive sun free from shadow at some one hour

each day, there is no better grass seed to sow than blue-grass, cocks-foot or orchard grass and Dutch or alsike clover. In any case June grass will soon predominate, except when the land is somewhat wet. Where this is the case, orchard grass and blue-grass will overcome it. No woods can be utilized as pasture unless deprived of all brushwood, and enough of the larger timber removed to allow of the sun being felt, and the growth of the grass influenced by it. Air alone will not nourish pasture grass, it must have the sun more or less.

In seeding down bush land, cocks foot and blue-grass are probably the safest to sow, especially if the land has a tendency to wet. The seed should be plentifully sown—and the land should be dragged with the harrow three times, so as to stir the soil as much as possible, to enable the seed to come at once in contact with it. It is well to use an A drag, and incline the teeth backwards at about an angle of forty-five degrees, which will greatly assist the team in passing over green roots.

### Sowing Mixed Seeds.

The advantage to be obtained from sowing mixed seed, has lately occupied the attention of agriculturists in Britain. It is alleged that where two or more varieties of grain have been sown together, selecting those that ripen at the same time—a heavier and more certain crop can be obtained. In many cases, the seed sown has been of different kinds, such as "peas and oats, barley and wheat," and in others samples of various varieties of wheat have been mixed together. In this latter case very large yields have been obtained. In this age of improvement in fanning mills, the presence of oats amongst wheat can be overcome; and the experiment of sowing early barley and oats amongst winter killed wheat has often been found successful. Of course, it is necessary so to class the different varieties of grain, that they will ripen together as nearly as possible.

A farmer in Britain sowed for several years a mixed sample of wheat; he states the result in the *Gardener's Chronicle*, as having been found very satisfactory. Sometimes one kind of seed would predominate at harvest and sometimes another. But on an average of several years, the result was in favor of sowing the mixed seed wheats. A farmer in Pickering has made some very valuable experiments with mixed seed. He states that he has found it generally successful. One year he harvested of "barley, oats, and peas," upwards of seventy bushels an acre.

### Hungarian Grass.

As the Hungarian grass question seems to be quite prominent at this time, I will give you the benefit of my experience with it last season, seeing that my hay crop was going to be very short, owing to the drought, I thought the cheapest way to buy hay was to sow the Hungarian, so after a great deal of trouble I finally succeeded in getting into fine condition three acres of bottom land (old pasture) on which I sowed one-half ton of Orohillo guano, and on the 6th of July sowed and harrowed in lightly one and a quarter bushels of seed to the acre; immediately after sowing had a light shower, and from that time to the time of cutting had little or no rain, and about August 28th, when the grass was in full blossom cut it with my mower; have since weighed it and found the yield to have been a little over four tons to the three acres. I have been feeding it for about two weeks to the horses, and have noticed that it is eaten by them much more greedily than timothy. It is such a quick growing crop that it is very exhausting to the soil. I would not cultivate it unless I manured very heavily. I am so well satisfied with it that I intend to sow 16 acres this spring and shall expect two tons to the acre. The time to sow is about the middle of May; sow broadcast and harrow in very lightly. The soil must be completely pulverized, and I believe one and a half bushels to the acre will give a finer and nicer hay than one and a quarter bushels—but if it should be cultivated for the seed, then one bushel to the acre is sufficient. My soil is a heavy red clay with clay subsoil.—*FRANCIS BIRD in Maryland Farmer.*

### To Plough Down Grass.

To do this effectually is one of the apparent impossibilities of modern farming. Every farmer knows it from experience. Notwithstanding the utmost pains and care in ploughing, the grass, especially if long, will bristle up in heards and tufts here, there and everywhere, injuring alike the appearance of the field and its capacity for growth; for this grass, instead of being visibly present to draw nourishment for itself and impede the growth of something else much more profitable, should be buried beneath the surface to manure the soil and assist in the growth of its betters. Well, do you wish to remedy this great difficulty? If so, use the chain and ball to your plough. No matter what kind of plough you have, try them. A piece of ordinary trace chain will do very well. Fasten one end of it to your coulter, and to the other end attach a round iron ball of from two to three lbs. weight—leaving the chain long enough to permit the ball to reach back to about the middle of your mouldboard, and there let it drag along, on the off side of course.

This is not a new idea, in fact it is a very old one, but, like good wine, age only improves it. Just try it once, and we have no fear of your verdict. It may not do the work to absolute perfection, but it will perform it at least fifty per cent. better than you can without it.

### Millet.

Millet seems to succeed everywhere with any reasonably fair treatment. It can be sown early in the spring, and will produce a succession of crops, by continued sowings, up to the middle of July in this latitude. Scarcely more than six weeks are required for its growth, and the crop should be cut, if for hay, when the tops of the seeds begin to ripen; if saved for seed, it may stand until the seeds become brown.

Millet requires a good soil, well prepared and as rich as may be made. Deep ploughing is effective in the cultivation of this crop against drought, and it is with almost all others. There is nothing better as a manural application than a mixture of bone dust and Peruvian guano, or a good super-phosphate. Barn-yard manure, when used, should be well rotted. Four or five pecks of seed are sufficient to an acre when hay is the object; when sown for the seed, which when ground is nutritious and fattening, rather more seed should be sown.

There are a number of varieties of millet, but our remarks above apply to that commonly in use, known botanically as *Panicum miliaceum*. Of its great value there can be no doubt, and we hope all of our readers who can do so will sow at least a small patch of it, if only as an experiment to test its adaptability to their situation. We only add that the hay it makes is excellent in quality, much relished by cattle and horses, and frequently reaches three to four tons to the acre in quantity.—*American Farmer*

### Care and Manure of Lawns.

We are aware that it is a long old-time practice to dress the lawn in autumn with coarse manure, and so make the whole foreground of a gentleman's place the apparent receptacle of his stable yard for the winter; but, thanks to our American ideas of propriety, and our knowledge of assimilation of plant food, we now measurably ignore the dogmas of old country gardeners and use specifics, i. e., just now we apply salt at the rate of four bushels to eight bushels per acre, bone meal in same quantity, and plaster one-fourth. The sooner these manural agents, all except the plaster, are now applied, the better, unless it be upon a lay of land so sloping that the coming rains, with melting of snow and ice, will cause the commingling or detrition of the manures to wash away with the falling water. In such locations we should not apply our specifics as above named until the snow and ice are gone, but then we would make no delay. The application of the plaster, i. e., its sowing, should be just after the grass has made an inch or more of growth.—*F. R. Elliott.*

MEADOWS AND PERMANENT PASTURES, that are moss bound and need renovating, can be much improved by going over them with a heavy harrow two or three times each way, and then putting upon them a mixture of 10 bushels of ashes, 300 lbs. of bone dust, 2 bushels of salt and 1 of plaster to the acre, and then sowing the following combination of grass seeds, about in the proportions given, to each acre: 10 lbs. of timothy, 1/2 a bushel each Ky. blue grass, orchard grass, perennial rye grass and red-top, and 1 quart of sweet scented vernal grass. Harrow again, and roll. This dose of fertilizer and the quantity of seed named will cost a good round sum, but the results will justify the outlay.—*American Farmer.*

## Agricultural Chemistry.

### SOILS.—Continued.

We have now described the principal mineral constituents of soils, and from what has been said many hints of practical value may be gained. The proportions in which these various ingredients are present in the soil varies in different localities, and hence the capacity of the soil to support crops varies also. By adding to a soil those substances in which it is naturally deficient, its fertility may be very greatly improved. Thus it has been proved by experiment that plants may be grown in pure sand if they are watered with a liquid consisting of the various mineral ingredients of a fertile soil dissolved in water in the proper proportions, and that they will even flourish surprisingly under these conditions.

There is, however, another very important constituent of almost all soils, and that is its *organic* portion. This consists of the remains of the plants that have grown in the soil, died, decayed, and crumbled away. We can easily imagine that this is a large constituent of most soils. The trees which cover so large a portion of our continent, and each of which is covered by such a countless myriad of leaves shed them either entirely or partially every year and scatter them over the ground. The grass, the moss, the ferns, and all the humbler plants die and decay on the surface of the ground, and even the trunks and branches of the largest trees, unless man interferes, yield at last to the same fate. The decay of this immense quantity of vegetable matter gives rise to the rich black mould of our woods. The products of this decay are present in a greater or less quantity in all agricultural soils usually mixed with a small quantity of organic matter of animal origin, due to decomposition of the bodies of dead animals, birds, insects, worms, &c. *Humus* is the name given to this organic part of the soil. It contains carbon, hydrogen, oxygen, and a little nitrogen.

The part which this humus plays in vegetation has been a matter of dispute. It is probable that some plants, at least, have the power of absorbing organic matter directly from the soil and appropriating it as nourishment, just as animals appropriate from the flesh of other animals and the leaves and fruits of vegetables, the organic compounds which they contain and convert them into their own substance. That this is not always the case, however, and that plants will thrive on purely mineral food has been proved conclusively by experiment. The humus seems to act by causing the nitrogen and oxygen of the air to unite together to form nitrous or nitric acids. This, however, it will only do in the presence of lime or some other base which fixes the nitric and nitrous acids, uniting with them to form nitrate or nitrite of lime. This explains the importance of lime to soils, and the advantage that may be obtained by adding lime to soils in which it is naturally deficient. Another effect of humus is to retain nitrates of potash and of ammonia when solutions of these salts are poured over it. A minute quantity of the nitrate of ammonia (which exists in rain water and in dew) and is retained by the humus of the soil and added to the nitrates and nitrites already formed there. Since these nitrates are formed by the humus from the air, it follows that their production will be assisted by bringing the air thoroughly in contact with every part of the soil. Hence the various operations of husbandry, as ploughing, harrowing, &c., are of great advantage in promoting these beneficial changes.

To prove that the humus acts by forming these nitrates and nitrites, and by absorbing and retaining those existing in the air, and that if these salts are artificially supplied to a plant it will live and thrive in a soil totally devoid of any organic constituents, a French gentleman, M. Joannel, has recently con-

ducted a series of extremely interesting experiments, which seem to be quite conclusive on this point. He made a mineral manure containing the following ingredients:—

Nitrate of ammonia.....	400 parts.
Nitrate of potash.....	250 "
Biphosphate of ammonia.....	200 "
Chloride of ammonia.....	50 "
Sulphate of lime.....	60 "
Sulphate of iron.....	40 "
	1000

Half an ounce of this mixture was dissolved in a gallon of water, and from one to six table-spoonfuls of this solution were given to the plants each week.

M. Joannel took two common geraniums of equal size and equally healthy. In April he planted one in a pot of garden mould, and the other in a pot of pure sand. He gave the geranium in garden mould nothing but common water; to the one in sand he gave his mineral manure. The geranium in the pot of sand bloomed all summer, and in the autumn was four times the size of the other. Two *agaves* treated in this way gave results similar to those given by the geraniums. He then tried plants grown in sand alone, to some of which he gave common water, and to others his mineral manure. At the end of the year, the plants grown without the manure were all either dead or dying, while those fed with the manure were in perfect health and vigor. By giving his mineral manure to plants grown in garden mould, M. Joannel obtained a very marked increase in their growth over that of plants in the same mould to which no manure was given.

Our readers will notice that the mineral manure given above contains the various ingredients which we mentioned in our last paper as being found in a fertile soil with the addition of ammonia, which exists in the atmosphere as nitrate and is absorbed and retained by the humus as mentioned above.

## Forest and Shade Trees.

EDITOR—GEO. LESLIE, JR., LEBANONVILLE, NEAR TORONTO.

### Tree Planting.

"An old correspondent, assuming the *nom de plume* of "Belyde," sends us the following communication: I am very glad to see that in your new shape, you still advocate the cause of tree planting. The fact is just simply this, that if the farmers insist upon cutting down all the standing timber and not planting trees sufficiently for shelter both to the ground itself and their stock, farming will be a very poor business indeed in a few years. I speak from experience, when I say that young trees can be saved at the very commencement of clearing land, and a little extra labor in drawing away the larger timber is all that is required to preserve nice plantations here and there on the farm. It is over thirty-seven years since I built my present house at Fergus, and at the time I saved good many of the trees round the house, and except about a dozen which have been topped or blown down altogether, the rest are there, and among them some very handsome maple, elm, basswood, and beech trees, and if I had only spared more of the smaller trees it would have been better. Young trees from three to six inches in diameter would, I think, be the best to preserve, except elms, perhaps, which have such strong wide spreading roots, that I don't think one of mine has been injured at all, and I am sure the Canadian elm is a very handsome tree. The basswood, which is just the lime or linden tree, stands the blast well, and the maple the king of Canadian trees, stands his ground well, although several of mine got their tops broken off in summer by the furious hurricanes which so often precede our thunder storms. I don't think more than one tree, a hemlock, has been blown up by the roots during the 37 years. With regard to planting, I began that business in a small way, some sixteen years ago, and have had considerable success. Except about eighteen Norway spruce, and a dozen of silver-leaved maples, I have got all my trees from the woods. The first requisite is a good fence round the piece of ground to be planted, a cow or an ox will destroy a young plantation in an hour or less. To insure immediate success, the next requisite is to have the ground well ploughed or trenched. As a good deal of my planting was for ornament, and to

shelter my house from the west wind which is the wildest wind in Canada, I got the land trenched, and planted chiefly with Canadian trees from the neighboring woods, and lost very few of them. I also planted a belt just in the wild grass and among stones and rocks, and although I lost a good many of the young trees, chiefly however from an excursion of cattle once or twice, still I have a very nice plantation of Canadian spruces, balsams, cedars and larches, and as they have plenty of room some of them are very handsome trees indeed. Some of the spruces are, I should say, almost identical with the Norway spruce, at least I can see very little difference. Where the ground was trenched, after the first three years, the trees grew very fast, sometimes from twenty inches to two feet in a year, I always thinned out, as it was easily done, and transplanted carefully and with success too, having the holes ready, and lifting one tree at a time, with a good ball at the root sufficient to fill a wheelbarrow, and this you can do either in spring or in autumn, and be sure to put a pail of water in the hole before you put in your tree, and with a little straw, or cleaning from your wood shed, put on the surface, your tree will be safe for a long time. I planted a good many poplars—mostly from cuttings, lombardy, aspen, and white or sabel—but I am now grubbing them out as they are very greedy of ground, and get shabby looking as they get old. I planted seedling elms, which have done very well and grow very fast. The basswoods and hemlocks are very tender, and the mice girdle the young hemlocks, but the soft scarlet maple grows freely from seed, and transplants well but does not stand drouth. The larch or tamarac grows fast, and is very pretty with its delicate green in spring and its sunny yellow in autumn. The poplar, after being well seasoned, burns very well, although it is quickly consumed."

NOTE BY EDITOR C. F.—We are glad to receive such communications as this of Belyde, as we prize very highly the practical experience of correspondents.

Trenching land is, of course, good for trees—or any thing else—but we fear in this country, where labor is so scarce and dear, very few will be found who will go to the expense of so costly a mode of preparation. Indeed there is no necessity, for very satisfactory results can be obtained in tree planting with ordinary surface preparation.

The spruce mentioned as being identical with the Norway spruce is no doubt the Canadian white spruce, a very valuable, extremely hardy, shelter-giving tree. An educated eye can, however, detect a great difference between it and the Norway; it being a much slower, more dense and compact grower, while the foliage is of a lighter color. The usefulness of water in the holes or about the roots of trees when planting, will depend much upon the state of the weather and the natural moisture of the soil. The writer has had charge of the planting of many thousands of trees of all sizes, in all sorts of soils, in all weathers, and never used a pailful of water to a tree in his life, yet rarely has a tree failed to grow with him. In planting, he observes these three rules, viz., never to leave a tree exposed long enough for the fibrous roots to become dried and withered; to tramp the earth very firmly about the roots, as it is filled in; and to give an immediate mulching. These rules, carefully carried out, will entirely do away with the necessity of watering, which involves a great deal of extra labor.

The poplars can be kept within reasonable bounds, and very handsome, by cutting off the tops every two or three years, thus inducing a new clean growth.

### Do the Roots of the Living Plants Freeze?

Mr. Meehan, editor of the *Gardener's Monthly*, says: "It is a popular fallacy that roots freeze. The sap in plants, like the blood in animals, cannot freeze and retain life. The internal warmth of the roots thaws enough moisture from the frozen earth to carry on growth where the warmth of the atmosphere excites the plant to vigorous action. We have seen excellent grapes ripened in hot houses, when the outside borders in which were the roots of the vines were frozen solid—just as good grapes indeed as if the borders were not frozen.

## Horticulture.

EDITOR—D. W. BRADLEY, CORRESPONDING EDITOR OF THE  
ROYAL HORTICULTURAL SOCIETY, LONDON.

### THE ORCHARD.

#### Planting Fruit Trees.

Having obtained young, healthy trees, well supplied with an abundance of fine fibrous roots; those too that are stout-bodied, not lank and slender, for the diameter of the trunk of a young tree is of much greater importance than its height; the planter will be ready to proceed to set them out. And first of all we will observe that it is of great importance to keep the roots as much as possible from exposure to the sun and wind, during the operation of planting, as possible. It is very common for planters to take a bundle of trees, from twelve to twenty, and carry them along with them, planting a tree at a time until all are planted, meanwhile leaving the roots exposed to a bright sun or a warm drying wind, so that before the trees are all planted many of them will have their roots well dried. This is very bad practice. The planter should provide himself with a bit of old carpet, canvas, or sack, and wrapping this about the roots of his parcel of trees, keep them well protected while he is planting, taking out only one at a time. If he have more than such a parcel, the roots should be protected by placing them in a trench and covering with earth. This is what nurserymen and gardeners term *heeling in* or *laying in by the heel*.

Before planting, the roots should be examined and any bruised or mutilated portions cut smooth with a sharp knife. A smooth wound heals over more quickly than a rough one. If the quantity of roots lost in taking the tree up seems to have been considerable, the side shoots and a part of the top of the tree should be cut back or shortened in, so as to restore the proportion between the root and the top. If the foliage, when the tree comes out in leaf, be so abundant that the roots can not supply the moisture that is exhaled from them, the tree will perish; but if the branches have been judiciously shortened in, so as to lessen the foliage to the quantity that the roots can supply with moisture, a steady and healthy growth will ensue. It is better to cut back the side branches at this time, leaving three or four buds at the base, than to cut them off close to the body of the tree. The circulation in the trunk will be kept up by the foliage thrown out from these spurs, but if the branches be cut off close, the exposed wood seasons back into the trunk, and if there be a large number of these wounds along the body, so great is the drying out sometimes as very seriously to affect the growth of the tree. For the same reason we advise that all the small spurs and leaf buds, that may be upon the trunk, be allowed to remain, as they very materially aid in keeping the body fresh and sound and the sap in free and healthy circulation. After the tree has become well established these may be cut away smooth with the trunk, and then the slight wound will rapidly heal over.

In planting an orchard it is very desirable to have the rows straight, and so as to range in every direction. If the field be a square it is very easy to do it, but when the boundaries of the field form different angles it is more troublesome. The following plan will assist in understanding the manner of proceeding to stake out the ground for planting an orchard. It is much better and more expeditious to stake it out first, and then plant the trees where the stakes stand, than to try to plant the trees as it is laid out.

We will suppose that the boundaries of the field run in the directions indicated by the lines A B and A C. At the desired distance from the fence, stretch two lines, perfectly straight, along the two boundaries above indicated, and fasten them tight. If it be intended to plant the trees say thirty feet apart each way, take two other lines, each thirty feet long, and beginning at A, mark in the directions A B and A C, along the lines, point thirty feet apart, and at each point set a stake. When this has been done there will be a row of stakes along two sides of the field, each row starting from A and the stakes in the rows exactly thirty feet apart from each other. Now let

one end of one of the thirty feet lines be placed at the stake at I, and one end of the other line of the same length be held at the stake at D, while another person brings the other ends of those two lines together. They will meet at N where another stake should be set. The person holding the end of the line at I should now proceed to N and hold it there, the person holding the end of the other line at D should now proceed to E and hold it there, while the person holding the other ends of the two lines will bring them together at O and set a stake there. In this way the party will proceed across the field towards B, and when they have finished planting the second row of stakes on that side, will proceed to the other side of the field and holding the end of one line at K and of the other at N will bring the other ends together at Q, and having set a stake there, will proceed along the side of the field towards C, planting stakes at T W, &c. When the field has been covered with stakes in this manner, if the work has been accurately done, they will be found to range in every direction, not only in the directions A B and A C, but also along the dotted lines A X, A Y, and A Z; M H, M S, and M R. By first setting the ground with stakes any inaccuracies in the measurements can be detected and remedied, so that when the trees are planted the rows will be perfect.

In planting trees it is necessary to pay some attention to the condition of the soil. In clayey soils it is very undesirable to plant trees when it is wet. The ground should be in a friable state, no matter what may be the character of the soil, though the evils resulting from planting in a sandy soil when it is somewhat too wet are not usually as great as when clay is the predominant feature. Again, if the soil be thin, and the subsoil of a cold, tenacious or hard nature, it is better not to make the holes deep, not even deep enough to receive all the roots, but to make them shallow and cover the roots by throwing the surface soil upon them. The writer advised a friend who was planting a young orchard on a thin clay soil, with a hard, tough clay subsoil, not to make any holes at all, but simply to spread out the roots on the pulverized surface, and holding the tree in position by tying it to a stake, to cover the roots with some of the mellow surface soil, thus making a flat hill over them. He followed the advice, and his fine, thrifty trees, now some years in bearing, attest the soundness of the advice given.

Where the soil is deeper, a broad hole should be made, of sufficient diameter to receive the entire length of the roots without bending them, and deep enough, if it can be done without going into the subsoil, to admit of the tree standing, when the soil has become settled, at the same depth at which it was growing when taken up. It is a very common error to plant trees too deep. We recently received a letter from a gardener residing in the county of Bruce stating that he had been called to inspect some trees which had been planted a couple of years but had made no growth, and which the owner wished were back again in the hands of the nurseryman from whom he got them. The gardener at once saw that the reason why they did not make better growth was that they had been too deeply planted. He at once took them up, set them out again at a proper depth, and now the trees are in a flourishing state.

Having made the hole large enough to receive the roots in their natural positions, make the bottom of it mellow and loose, place the tree in position and spread out the roots, then cover them gradually with mellow surface soil, working it in among the roots with the hands, and gently pressing it down with the foot so as to bring the soil into close contact with every root and fibre. When the earth is all placed over the roots, the surface should not be packed down but left loose. In this condition the moisture that may be received in rain and dew will be more readily absorbed, and evaporation will be retarded. But in addition to this, in our climate where the heat of the sun in summer is often so fierce, and the drought so protracted, it is very important that some loose material, such as coarse barn-yard litter, old chip manure, or even sawdust, be thrown upon the surface, over the roots to the depth of four or five inches, so as to keep the ground during the first season cool and moist.

This is called *mulching*, and the loose material thrown upon the ground is termed a *mulch*. Great importance is attached to the use of this mulch by all persons familiar with the transplanting of trees, and we feel confident that would our farmers and others, when they are planting, at once apply such a mulch before they think their work is done, many hundreds and thousands, not to say hundreds of thousands, of trees that now perish would live and thrive. The value of this mulch to newly transplanted trees, as a protection to the roots from the heats of summer and the frosts of winter has not been sufficiently appreci-

ated. It is fully as important for winter protection in our climate as for summer. If the ground is frozen to a sufficient depth to keep the earth from freezing about the roots, enough moisture can be readily absorbed by them to supply the evaporation taking place through the bark of the branches, which are constantly swept by the drying, frost-laden winds; but if their supply be seriously checked by the hard freezing of the earth, the tree, enfeebled by the late removal, has not sufficient vitality to thaw out the earth about its roots, so as to obtain the needed moisture with sufficient rapidity, and the tree is more or less reasoned by the frosty winds, so that it puts forth feebly the next spring, if indeed it puts forth at all.

#### Effect of the Stock on the Bud or Graft.

Prof. S. B. Buckley, of Texas, furnishes the following communication to the *Rural Alabamian* on this subject:—

Although it has long been known that the stock has more or less influence upon the graft, modifying to a greater or less degree the quality of the fruit, yet in practice it is not recognized or thought of by most fruit-growers. First, a large class of nurserymen bud and graft upon seedlings, paying no regard whatever to their origin or quality—the only item of consideration being to have the bud or graft true to name. This is one cause of the variation of different kinds of fruit, even in the same orchard, and in trees growing near each other in the same variety of soil and subject to similar influences. We noticed this particularly in our peach orchard the past season. Some trees of the Hale's Early growing near each other differed in the time of ripening their fruit at least two weeks, besides, the size of the fruit varied and even its quality had a sensible difference. All this occurred in the same row of trees, and in similar soil. This can be accounted for only from the influence of the stock upon the bud. The late ripening fruit was on trees the roots of which were from seedlings of late ripening fruit, etc. The same modification in time of ripening, and also in size and quality of fruit, were noticed in several other kinds of peaches.

A striking instance of the influence of the stock upon the bud was lately told us by Mr. Rutledge, of Fond Spring, Williams County, Texas. He budded Hale's Early upon the wild plum, *Prunus umbellata*, which is quite common in the woods of this portion of the State. Its fruit is also generally very sour and unpalatable. The bud grew and bore fruit, but the peaches were more than a month later in their time of ripening, and also smaller and of inferior quality—not fit for men to eat, and only good for hungry hogs, or perhaps for cooking.

The lessons taught by such instances are full of valuable suggestions to all fruit growers.

#### Directions for Treating Tree Seeds.

Mr. A. Bryant, Jr., says most deciduous tree seeds should be mixed with twice their bulk of sand or earth, as soon as received, and kept where they will be cool, and moist (not wet) until season for sowing. Freezing will not hurt them, if kept frozen until time for planting. If very dry, soak the seeds two or three days before putting up.

Exceptions to above are *ailantus*, *catalpa*, the birches, etc., which should be sown dry.

Honey, locust, coffee tree, and red bud will germinate sooner if soaked in warm water two or three days before planting.

Evergreens and larch seeds should be sown in beds under lath or brush screens, and covered lightly with fine earth.

Fruit seeds are usually soaked from two to six days, according to dryness, and then mixed with moist sand or earth, and kept frozen until time for sowing. Our Morello cherry, however, being kept fresh, will not need soaking. We recommend to the inexperienced that they shade all young plants the first season.—*Farmer's Union*.

**HEELING-IN.**—This term, or "laying in by the heels," is used by gardeners to designate a kind of temporary planting. The plants are laid closely together, and the roots covered with earth. This operation checks growth, and yet keeps the plants alive. It is often very convenient when one wishes to remove plants from a piece of ground, and the place where they are to go is not yet ready, to heel them in. Trees are often heeled in for the winter, they being taken up in autumn, and laid in trenches at an angle of 45 deg., taking care to fill in the earth so completely as to leave no spaces among the roots.—*Exchange*.

### The "Downing" Gooseberry.

The accompanying woodcut is an illustration of the new American gooseberry, known as "the Downing gooseberry," of which great things are spoken by our neighbors. Mr. H. J. Hooker, of Rochester, writing on this subject says:

I was struck with the fact that we had accomplished very little yet in improving this fruit, by finding on the coast of Maine, an abundance of wild gooseberries with fruit nearly as large and good as the Houghton; growing without care from man, among rocks and in poor soils. If we have stock as good as this to start with, it does not speak well for us that we have thus far done so little to secure superior varieties adapted to the wants and tastes of our citizens. Experience with other fruit shows that we must look to native grown seedlings for our most

3. *The "Smith's Improved."*—This variety presents the habit of growth, slender branches, and moderately rapid growth of the Houghton, with much larger fruit, of a pale yellow or greenish yellow color, and excellent flavor, thin skin, and excellent table cooking qualities. More vigor of growth in this sort would be desirable, its disposition to bear a very heavy crop of fruit being prominent.

I am inclined to think pruning and liberal culture will suit this variety, and with these I do not see how it can fail to please. The accompanying cut was correctly drawn from a well grown plant in full fruit of the NEW DOWNING GOOSEBERRY. This sort grows more in the style of some of the foreign varieties, but with much greater rapidity and vigor of root and branch. It has stout heavy wood, very thorny, and with an abundant, rich foliage, which in our grounds resisted all disease, and held on with re-

### Evergreens among Pear Trees.

Gen. F. H. Hyde, Vice-President of the Connecticut State Board of Agriculture, planted a number of small evergreens in a circular form around some pear trees, simply for ornament, intending to keep them down in the front of a hedge, and to allow the pear trees, "for effect," to appear above them. The plan was neglected after a while—as many such plans are—and the evergreens soon out-stripped the dwarfs, and towered up above and nearly encircled them. It came to be noticed after a while that while the pear trees away from the evergreens were irregular bearers of rather inferior fruit, those within the circle were almost invariably prolific, and the fruit was of superior quality. There was no other apparent cause for this result than the influence of the evergreens, hence the inference in favor of protect on would seem to be a just one.



excellent and profitable sorts. Little can be done to change or modify the constitution of a plant by special care or culture; we must go to the seed for all reliable variations; and when any disposition to vary from the original wild type is discovered, we must follow it up, and, in the end, secure the results most desired.

So far as I know, the gooseberry has not in this country produced many new and promising varieties; it has held well to the habit of all wild fruits; not to show much change, until, in the hand of man, those conditions are secured which give safety to, and use for, individuals whose merit is not so much in hardihood of constitution, as beauty, abundance and excellence of fruit. The only improved American gooseberries which have come under my observation, are the following:

1. *The "Houghton Seedling."*—This strongly resembles the wild type, but is more productive, somewhat larger, and better flavored than those found growing wild, retaining the vigor and hardiness of the original.

2. *The "Mountain."*—This is very different from the first, and offers peculiarities of merit quite distinct and interesting. The plant grows tall and very large, abundantly productive of fruit varying from large to quite small upon the same branch; with a tough skin, wild flora, and disposed to hang long upon the bush. Both this and the Houghton are red in color.

markable persistence, until severe freezing removed it. This heavy foliage proves of value to the fruit, not only in the certainty of maturity, but by shielding it from sun scalding, which sometimes injures other sorts. I cannot say that I have found the fruit of "Downing" any great improvement in flavor over the "Houghton," but it is twice as large, and the pale green color is preferable, as most of the gooseberry crop is now used for various cooking and canning purposes; it will, I think, be found that its increased size, remarkable vigor and productiveness good color and certain crop, will place it among the real acquisitions in this fruit. I looked upon these new sorts as additions of real merit in themselves, and a strong assurance that from their progeny we may reasonably expect soon to see a list of gooseberries possessing all the good qualities of the foreign sorts, with the added recommendation that they are perfectly adapted by nature to our climate. When we have these improved sorts we shall find an extensive use and enlarged market for the fruit now so little valued.

Some gardeners and agricultural writers lay much stress on the value of forest leaves as a fertilizer. Dr. Nichols of the *Boston Journal of Chemistry* says that reckoning good stable manure at \$8 per cord, a cord of dried leaves (about 100 bushels he makes it) is worth about 50 cents. They are of some value as an absorbent in stables, but less so than straw, as they "lack its reedy character and decompose far more slowly." This will doubtless surprise some readers, but it is probably correct.

This discovery, however, is not a new one. The influence of shelter belts on fruit trees, as well as on farm crops, has long been known and taught by enterprising horticulturists, but like other improvements not yielding immediate revenues, have been slow to adopt the plan. There is not a particle of doubt as to their good effects both for shelter and for beauty. An orchard of any kind interspersed with them would without doubt yield better returns, even with one-quarter or one-third the space given to evergreens. Their pyramidal shape makes the shade they cast comparatively small, hence that is a slight objection. If inclined to occupy space at the expense of necessary convenience, they can be clipped, headed back or sheared into almost any form, and their density of foliage only be increased thereby. If largely planted over the country as screens, shelter belts, or only interspersed here and there through orchards and farms, they would not only exert a special protection on adjacent orchards, and vastly beautify the landscape, but would effect a general amelioration of the climate, which would be a universal benefit. The culture of evergreens is only in its infancy as yet, and every fact or incident tending to promote taste or inquiry in that direction may justly be regarded as a public benefit.—*The Working Farmer.*

—Farming should not be looked upon merely as a means of subsistence, but adopted partly with the view of enabling us to cultivate the moral, intellectual and social powers, and to discharge the duties devolving upon us as citizens, under circumstances the most favorable. It should not tend to make men mere machines, who toil for the sole purpose of gratifying their appetites, but to elevate and refine to the highest degree of perfection, all the better faculties of our nature.



**THE KITCHEN GARDEN.**

**German Hot-beds.**

We take the following description of a method of preparing cotton cloth so as to answer the place of glass as a covering for hot-beds, cold-frames, &c., from *Our Home Journal*. We have never tried this substitute for glass, but perhaps some of our readers will give it a trial and send the results of their experience to the CANADA FARMER:—

We feel that, in giving some account of translucent cloth hot-beds, to be employed instead of the expensive glass frames in general use, we are doing all our gardening readers a service. We can vouch for the value of the 'German Hot Beds,' having tried them very successfully many years ago. For forcing early melons, tomatoes, &c., this prepared cloth is especially adapted, as it can be tacked to boxes of any size required and cut to fit them. Little rough square boxes, of the proper size and height, covered with the prepared cloth, can be placed over the hills in which tomato, melon, or other seeds are planted, and the plants allowed to stand, without transplanting, until all danger of frost is over, when the boxes may be taken on and packed away carefully for another season.

Take white cotton cloth, of a close texture, stretch it, and nail it on frames of any size you wish; mix two ounces of lime water, four ounces of linseed oil, one ounce white of eggs separately, two ounces of yolk of eggs; mix the lime and oil with a very gentle heat, beat the eggs separately, and mix with the former. Spread this mixture, with a paint brush, over the cloth, allowing each coat to dry before applying another, until they become water-proof. The following are some of the advantages these shades possess over glass.

1. They are being hardly on fourth.
2. They are easily and cheaply made.
3. If they are light; they do not require watering; no matter how intense the heat of the sun, the plants are never struck down, or faded, or checked in growth; neither do they grow up long, sickly, and weakly, as they do under glass, and still there is abundance of light. The heat, entirely arising from below, is equable and temperate, which is a great object. The vapor arising from the manure and earth, condensed with a cool air passing over the surface of the shade, and hangs in drops upon the inside, and therefore the plants do not require so frequent watering. If the frames or stretchers are made large, they should be intersected with cross-bars about a foot square, to support the cloth. These articles are just the thing for bringing forward flower seeds in season for transplanting.

**Trees in the Kitchen Garden.**

We would caution our young beginners in horticulture and gardening, against the too common practice of growing large fruit trees in kitchen gardens, as the apple, pear and cherry trees are often found high enough to require a thirty or forty round ladder to gather the fruit. These towering trees are much more hurtful in the kitchen garden than is generally supposed; as their roots in the well cultivated mold of a garden run a great distance, and the crops underneath the shade of the trees are very indifferent in quality. As most gardens are more or less frequented by the family and their visitors, good, useful crops are certainly more interesting than poor ones, with an indifferent crop, perhaps, of apples or pears on the trees which overhang them. It is better to have the trees by themselves and the garden by itself; the trees will do better because they can receive the culture best for them which is surface culture; whilst the garden can be deeply ploughed to insure good crops of vegetables, which would be injurious to the roots of trees.

The main object in recommending this system is, to relieve the garden from those high, sometimes broad, overshadowing trees which greatly injure so many plots of vegetable ground. Trees are often too near; though on the outside of a vegetable garden, they injure by their shade, and they send their roots long distances foraging, and the more rapid growing kinds will soon devour the very fat of the land. We have seen a root upwards of fifty feet long, and nearly as thick at one end as the other, where it had got into the line of a flower border of good material, and speedily found its way to the furthest end of it. Trees on lawns will also search out flower beds, and occupy their enriched contents with astonishing rapidity, to the detriment of the proper tenants there.—*Pacific Rural Express*.

**Medical Value of Asparagus.**

A medical correspondent of an English journal says that the advantages of asparagus are not sufficiently appreciated by those who suffer with rheumatism and gout. Slight cases of rheumatism are cured in a few days by feeding on this delicious vegetable; and more chronic cases are much relieved, especially if the patient avoids all acids, whether in food or beverage. The Jerusalem artichoke has also a similar effect in relieving rheumatism. The heads may be eaten in the usual way, but tea made from the leaves of the stalk, and drunk three or four times a day, is a certain remedy, though not equally agreeable.

**How to grow Early Cabbage.**

The *Pacific Rural Press* says: "Take a large head of cabbage, strip off the outer leaf, and strip off the bud found at the root of the leaf. Take this bud, and simply set it in rich earth, like any other plant. The result will be a fine growth of early cabbage plants, with heads larger and sounder than can be raised in the ordinary way."

**THE FRUIT GARDEN.**

**Grape Vine Ties.**

There are a great many substances that can be used and are used for the purpose of tying up grape vines, but what is the best and cheapest is, I think, yet an open question, which I propose to discuss. To come to a proper understanding as to what substance is the cheapest tie, other things than the mere first money cost must be taken into consideration. For instance, I shall propose three-ply jute twine as the cheapest material with which to tie up the green wood, which can be had at 25 cents per pound, some one else proposes rye straw saying that it costs almost nothing, etc. Well, let us see. Ten pounds of twine costing \$2.50, have always sufficed to tie up all my grape vines, besides what was used for strings to bud with, and to tie up all sorts of other things. In using the twine there is no loss of time in preparing, etc., and a man can do more tying with this material in a day than he can with any other that I know of.

How is it with rye straw? A piece of ground must be ploughed and harrowed, seed must be purchased and sown and harrowed in, and when you want to tie you have to prepare it. Who will say that enough for 12 acres can be thus grown and prepared for less than \$2.50. In fact I don't think any one can begin to even prepare it for that sum after it has been grown; and when grown and prepared, vines cannot be tied up near so rapidly with it as with the twine; and after the rye straw has been on a while, has got dry, bleached by sun and rain, and is partially rotten, along comes a rain and wind, and down come great numbers of the young canes that have been tied up, and very likely have to remain on the ground several days before being again tied up—and a greater loss is the result than would have been the cost of the twine with which to tie up in the first place. Gunny sacks are good, but the first cost with the labor to prepare them, taken together with the difference in the amount that can be accomplished in a day, will make them a dearer article than a good new twine.

From my experience and observation, I am free to recommend three-ply jute twine as the best and cheapest material with which to tie up the green wood of grape vines; and for tying the bearing canes, I have found nothing cheaper or better than an article of tarred rope, resembling lath twine, but only half as thick, used by hardware men to tie up hubs, spokes and various other articles requiring a strong tie. It comes in coil of 85 strands in a coil, weighing about a pound to the foot, and sells at 25 to 30 cents per pound. This can be cut into lengths of 8 to 10 feet a strand, drawn out and used from one end, when a tie is made, it is cut off, and thus there is no waste, as is the case when the ties are cut into lengths before using. With this there is no loss of time to prepare it for use, more vines can be tied up than with any other article that I know of, and it will last the whole season without giving away; and when the work has been properly done, there will be no need to go through the vineyard after every rain or wind and tie up vines that have torn loose the ties that have failed to hold them.—*E. A. Richt, in Rural World*.

**Current Blight and Worm**

Our attention has been called to a subject of lively interest to currant growers, by Mr. E. W. Garvitt,

of Alameda. His observations go to show that many of the currant bushes of Oakland, Alameda and other places around the Bay, that have hitherto produced no crop of fruit, are found to be stricken with what appears to be a kind of blight, accompanied by the presence of a minute insect or parasite in countless numbers. These blighted areas are seen to be leafless, and looking like dead sticks, standing in the midst of young ones that seem to be but little affected.

When cut with the knife, at almost any point along the leafless shoots, reveals the presence of a white grub-like worm, from half an inch to an inch in length, occupying the cavity of the pith or centre of the stem, and eating its way at a lively rate along the length of the shoot, whilst the smaller insect, which is found to be but a secondary or incidental pest, is the cause of the blight. The part of the stem cut off in most instances that which is left in the ground, does not show the growth of last year. The young of the worms are hatched are evidently seen to be partly in or under the buds, and partly in or under the twigs, then makes its way directly into the body of the twig, utterly destroying it, and finally burrowing in fact kills it outright. By the time that the buds at this time, it is easy to see and find the worms in the shoots affected, from what has been stated of the appearance.

Not a word of it in making careful examination of all parts of the bush, and every part found to be affected, should be immediately cut away and carefully burned. In this way vast numbers of the worms can be destroyed and their increase materially lessened. As preventive to a great extent, all the old wood, or that more than two years old, should be cut away every year, leaving only the young and vigorous shoots to bear fruit. In this way the ravages of the insect can be greatly lessened, and the fruit increased in size and quality.—*Rural Press*.

**Remedy for the Currant Worm.**

Powered white hellebore is a perfect specific. If seasonably and rightly applied, the destruction of both eggs and larvae are complete. It will not do to wait until the bushes are defoliated, but watch them narrowly, commencing early, before the leaves are fully grown. The first indications are seen near the ground, or on the lower branches, in the finely perforated leaves, on the under side of which will be found numbers of very minute yellowish green worms, and perhaps some unhatched eggs. No time is to be lost now—have ready the hellebore previously rubbed through a sieve, or a horse feed from lumps, and, passing along to windward of the row, scatter with the hands sufficient to dust the lower portion of the bushes. It is not necessary that the leaves should be wet. A gentle breeze will diffuse the powder throughout. The eggs are always deposited on the under side of the leaf, and three or four distinct crops of worms appear during the season, each succeeding one higher up on the bushes, which must be looked over often, and if there are any worms, renew the application. Four years ago my bushes were overrun, and a part of them, with the fruit on all destroyed. Since then I have pursued the foregoing plan with entire success, having healthy bushes and abundant crops of finest currants. My neighbors have delayed longer, been less thorough, and lost their crops almost entirely. A great quantity of hellebore is not necessary; a light but complete dusting does the work. *See my Bulletin*.

**Cud-Grafting the Grape.**

A correspondent of the *London Garden* gives in substance the following mode of working our valueless sorts of the grape, which he says is better than either common budding or grafting. The best time for the work is after the vine has partly broken into leaf, and the blighting has nearly ceased—the shoot from which the buds are taken having of course been kept dormant in a cool place. First cut off a piece of wood from the shoot of 1st year's growth, three or four inches long, with a pump bud well ripened at the middle. Then cut away lengthwise one-half the wood, taking care not to destroy the pith at the woody base of the bud. Cut the ends with a sharp knife perfectly smooth and straight, and then place the prepared bud on the stem of the old vine to be worked over, and mark out the exact length and breadth of the piece holding the bud; cut out a part of the stem sufficient to receive the bud with close fitting—one side at least, and both ends should make a perfect fit. Press the bud in, tie firmly, and cover with clay or grafting wax. Several buds may be inserted in one large stem, to guard against failure. A part of the top should remain until the union has taken place. After the bud has grown a few inches the remainder is removed.—*Cultivator*.

### Setting Young Fruit Trees.

I have seen quite a number of articles lately in the agricultural papers, treating on the subject of setting out young fruit trees, none of which agree with my experience on the subject. Some writers say to dig a hole two feet deep and three or four feet in diameter, then throw in a quantity of stable or other manure; then set the tree, &c. Now, I have seen trees set in this way different times. They generally grow very fast and make nice trees but they come into bearing extremely late, if ever. I know of trees that were set in this way fifteen years ago; they are now large, thirty trees, and many of them have never borne an apple, and the rest very sparingly, and I find on inquiry that this is universally the case. If the land is so thin as to need manuring, apply it to the whole surface of the ground and plough or harrow it in thoroughly. My plan is to have ground well ploughed, as deep as it can be, and put it in as good order as for any other crop. I then prepare as many stakes as I have trees to set. I then set the stakes just where I want the trees, generally in rows north and south, and east and west. I aim to get them exactly in squares, so that my trees will (when set) be in rows every way. I commence setting at one corner, take up a stake and dig a hole just large enough to take in the roots of the tree nicely. I first throw out the surface earth in one place and if it is necessary to dig the hole deeper, I throw the clay or gravel, (as the case may be) in another place. I then set in the tree, and throw in the rich surface earth and with my fingers work and press it tightly in about the roots, tramp lightly with my feet, then fill up with the remaining dirt until the ground is a little rolling around the tree. I aim to have the tree (when the ground settles) just as deep in the ground as it was in the nursery. When finished I drive the stake in the ground on the south west side of the tree and tie the tree to it to keep it straight until it gets firmly set in the ground. I then go to the next, etc. If the ground is thin it is a good plan to haul a few waggon loads of surface earth from the forest, and throw in around the roots a due proportion of it while setting the tree. But never use manure. Last spring I was passing through a neighbor's farm; he was setting out apple trees, nice, beautiful trees, too. He had a spade and dug a hole about 16 or 18 inches deep and just as near the width of the spade as he could get the dirt out; he then forced the roots of the tree down to the very bottom of the hole, threw in the dirt, tramped it and called it a finished job. The tree was from 6 to 10 inches deeper in the ground than it was in the nursery. I told him that I had set many fruit trees and had been very successful, but I had never set a tree like that. I then described how I did set them. He replied that in this country they must be set very deep to guard against drought. I set out 150 trees last spring in the manner described above and did not lose a single tree, while my neighbor lost about three-fourths of what he had set. After setting a young orchard the land should be cultivated in some crop for a few years; corn crop will do, but it causes the young tree to grow up too spindling. The potato crop is best.—*Corr. Farm Journal.*

### Now Remedies for Insects.

The following valuable remedies for insects are furnished by Charles R. Dodge, assistant entomologist of Department of Agriculture, and also the entomological editor of *The Rural Carolinian*. They are recommended as simple and reliable:

**Pear Slugs.**—This insect, which sometimes plays such sad havoc with the foliage of plum and cherry trees, may be destroyed by frequent applications of a mixture of lime, soot and soap-suds, by means of a garden syringe. The mixture is made by adding to twelve gallons of cold water, one bushel of soot and half a peck of unslaked lime, allowing it to stand one day to settle, after which is added one pound of soft soap dissolved in warm water.

**The White Grub.**—This destructive insect, producing in this country the May beetle, (*Leucosterna*), and in Europe the beetle known by the common name of "Cockchafer," is well known to many of our readers through the damage it does to pastures and grass lands. Their mode of warfare is to devour the roots of the grass, causing the sod to die out in spots, and it is said that simply applying to the affected places water, in which petroleum has been stirred, will exterminate them. It is also recommended to keep down insects on plants. The small quantity of petroleum seems to impart its disagreeable properties to a large amount of water, and applied in this manner the plants are uninjured.

**Mealy-bugs.**—The following remedy, tried upon grape vines (under glass) in Kellermont Gardens, Glasgow, was a complete success. The vines which

were badly affected, were taken down, the loose bark scraped off, after which the back walls of the house were given two coatings of lime wash and glue, adding half a pint of turpentine to each gallon of the mixture. The rafters and glass were also given at intervals three washings of turpentine, and finally the vines themselves were given a good coating of the following mixture: Three ounces of soft soap, three ounces flour of sulphur, one pint tobacco water, two wineglassfuls of turpentine, one gallon of hot water, and clay enough to give it the consistency of paint. The result, with a top dressing of loam and horse dung, was healthy vines, and a fair crop of grapes, clean and free from mealy-bug.

**Destroying Caterpillars.**—An excellent remedy, which has been used on a large scale in Southern France, consists in a dilute solution of sulphide of potassium, at the rate of about one part in five hundred. The infested plants are to be sprinkled with the decoction by means of a garden syringe, and it is said that vegetation is not in the least injured by its application.

### How to Manage Cuttings.

In selecting a cutting, a great deal depends upon a judicious choice; if the slip is too young and full of fresh sap, it will fade away from too much evaporation; and if it is too old—i. e., hard and woody, it will take a great while to strike root. You must take a cutting that is partly ripened, and is from a vigorous shoot, yet is a little hardened at the base. It is also essential to have a bud or joint at or near the end of the cutting, as all roots strike from it, and the nearer it is to the base the greater your chance of success. Plant your cuttings in common red pots, filled half full of rich loam and two inches of sand on top (scouring sand will do, but not sea sand), wet this thoroughly and put the cuttings close around the edge of the pot; for if the bud joint comes in contact with the surface of the pot, it seems to strike root more quickly. Pull off the lower leaves before you plant the cutting. Press the wet sand tightly about the tiny stem, for a great deal of your success in raising cuttings depends upon the close contact of the sand with the stems. When the cuttings are firmly planted, cover them with a glass shade if possible, for it will generally promote the growth of the plants.

Moisture, light and heat are the three essentials to plant life; without them no cutting will start. Shade for two or three days from sunlight, but don't let the sand become dry; then give all the sun you can obtain; keep up a good supply of moisture and you can hardly fail to root most of your cuttings.

Cuttings of roses, verbenas, oleanders, heliotropes, etc., can also be rooted in small vials filled with warmish water and suspended from the window casement. Select the cuttings as described above; pull off the lower leaves and insert the end for about an inch into the vial. Tie a string about its neck and hang in the sun. If a bit of cotton wool is wrapped about the cutting where it goes into the neck of the vial and it is kept wet, it prevents the rapid evaporation of the water. When the tiny roots show themselves about an inch or more in length, fill up the vial with a rich composted soil; let it hang for two or three days longer, then break off the glass carefully, without disturbing the roots, and pot the plant. Managed in this way the roots receive no check, and the plant will grow very vigorously. The cutting can be taken from the water and the roots planted in pots, but they will cling closely together, and are not as naturally disposed as when the glass is broken off, after the roots are covered with soil.—*Floral Cabinet.*

### Starting Flower Seeds.

There is nothing like loving them to coax flowers to grow. Some old ladies seem to quicken the sap in drooping plants the moment their kind hands touch them. They give them their hearts, and so a thoughtful quick-witted care, and their fuchsias are always the largest and their pinks the sweetest. Beginners are often troubled at the outset to get seeds to germinate. Some will grow anywhere. Others need tenderer care, and for them we have these directions from an experienced hand. If you have no loam laid away for this purpose, take, any warm day, the upper surface of loam from your richest garden beds. Bake it in the oven in an old tin pan; when so dry as to crumble in your hands, add one-third white sand. Now fill your pots, boxes, or pans with the mixture. The pots made for planting seed, with large holes for drainage, are the best; but salt, rasin or cigar boxes will answer. Fill to the brim with heated soil, press down firmly, and, while milk warm, plant your seed. If large enough, place them

in at one at a time, about one inch apart; if very small, like petunias, sprinkle over the soil, press them in gently with the hand, then sprinkle on sand. Take a piece of any old flannel, double it, and lay on the seeds, pressing it down at the corners; then water with lukewarm water over the flannel. Put your pots or boxes in some warm place, on the shelf of a range, or on a mantle piece. The kitchen hob is the best place, for the steam from the kettles keeps the air moist. Leave the boxes there until the seeds begin to push, giving luke warm water over the flannel every day; then put in a sunny window, and, if the nights are chilly, return the boxes to the mantle shelf or back of the range. This way of planting rarely fails; the earth, being warmed through, starts the seeds as well as a hotbed, and the flannel prevents the caking of the top of the soil, and also keeps up a uniform heat. Of course, the same treatment will be as effectual with seeds for the kitchen garden, though most of them do not need such careful nursing.—*Exchange.*

### Remedy for the Cut Worm.

The ravages of the cut worm in our corn crop are frequently very great; cause much loss of time and labor in replanting. Did we all plough our corn lands in the fall, and not put it off as most of us do till late in the winter or the beginning of spring, the cut worm would not be so destructive; but as it is, the labor of replanting from this cause is often equal to that of the first planting, not to mention the damage to the crop by the lateness of the replanted portions. I know of no remedy so effectual as early ploughing. Steeping the corn in cold tar is only a protection against animals that eat the seed. It is no protection against the worm. Some years ago, a neighbor, who was a farmer of long experience and who was very successful, told me how he guarded against the cut worm. He made a mixture of ashes and plaster, two-thirds of a pound of the former and one-third of a pound of the latter, and after the corn was covered, made a hand follow the coverer and drop a handful of the mixture on each hill. I have tried this remedy and have found it invariably successful. One year that cut worm threatened to ruin my crop, I applied it to check the work of destruction and it acted like a charm.

I have no doubt, as the friend who gave me this remedy, was not an inventive or adventurous man, that it is known to many persons, and that I am writing what many of your readers know already. But I am sure it is not known to everybody, and that some who knew it have forgotten it, therefore I mention my experience for the benefit of the ignorant and the forgetful. Even if the proposed remedy be no remedy at all against cut worm, and I have been mistaken, to try it will do no harm. On the contrary, it must do good, as the ashes and plaster will certainly promote the growth of the corn plants and increase the yield. But I believe that if the ashes and plaster in the proportion I have indicated are applied to each hill of corn, the cut worm will be routed, and the cost of replanting will be saved.—*Diswiddie, in Southern Farm Home.*

### Carnations and Pinks.

"An Amateur," from Des Moines, Iowa, complains that he has no success in rooting cuttings of either carnations or pinks, although he never fails in fuchsias, geraniums, coleus, verbenas, or begonias. The varieties he succeeds with we all find to root quicker than the carnation or pink, but not more surely if the proper conditions be observed. These conditions are, that the plant of carnation or pink from which the cuttings are taken must be in a healthy, growing condition. The temperature of the sand of the propagating bench in which the cutting is inserted should range from 65 to 75 degrees, and the atmosphere 15 degrees less. The sand must always be kept moist, and great care must be taken that neither sun nor draft of air strike the cuttings long enough to wilt or shrivel them, for if once shrivelled nearly all hope of rooting them is gone. But these conditions of temperature are not likely to be obtained easily by amateurs, so I again recommend, as the safest of all methods of propagating, the saucer system already described by me in your columns, and also in my work "Practical Floriculture," as the best method of propagating carnations, roses, or in fact anything else in the small way.—*American Agriculturist.*

**ORNAMENTAL HEDGE.**—The *Horticulturist* describes a rose hedge of Lord Middleton, of Applecross, England, which the past season was five feet high, over two hundred feet long and one sheet of flowers. The variety was the Gloire de Dijon, and the hedge was used to screen a kitchen garden. The variety is a tender tea rose.

## Correspondence.

Kohl Rabi.

(To the Editor of the CANADA FARMER.)

Sir,—Of late years I have not intruded upon your columns with any remarks of mine regarding agricultural matters; but as it seems to me that the above named root at the head of this article, is but little known, with all its advantages and desirabilities to the Canadian farmer, I have thought it would not be amiss to state through the medium of your widely circulated journal, what I know of the merits of this plant, and to suggest that the enterprising agriculturists of Canada, give it the consideration and trial which it is worthy of. In the first place, I may safely say that the failure in many parts of the country of the turnip crop, the two last hot, dry summers—but more especially the last one—has caused the cultivators of field roots to reflect seriously on a substitute for its failure, and I know of no root that can be grown for stock, that will always insure the farmer against so severe a loss as he has of late suffered from his turnip crop as the "Kohl Rabi." I have seen heavy crops of this desirable root grown in the old country to great advantage in dry summers, when the turnip crop has proved a partial failure on the same farm, with no other preparation than an ordinary one for turnips and other roots, and I have heard of the same success attending the cultivation of this root by farmers in this Province the last two dry summers, who thought themselves fortunate, as the seasons turned out, in having given it a trial, and this crop can be grown upon soil that you could hardly expect would produce a crop of turnips. It cares not how strong the nature of the soil is, provided it is deeply ploughed and well pulverized with as much manure as you can give it. And the reason you are secure of this crop is, that it is cabbage rooted, and consequently goes deeper into the soil and wider in search of food than does the turnip, and the moisture it finds prevents any stagnation of growth in dry weather, hence the bulk you get both above and in the soil.

There is not a more forcing or stronger green food than the head of this plant affords for fattening either sheep or cattle, as this has been proved and is freely admitted over and over again in the old country, and as a much heavier weight per acre can be grown than of turnips, it must be in every respect a very desirable root to cultivate, especially so, as it requires no more labor than the turnip to produce it, and I should say the quantity of seed, two pounds to the acre, would be sufficient, and thus out the plants the same distance as you would for the turnip.

After the head of the root is eaten off, towards the fall of the year when the grass keep becomes so valuable and scarce, the roots will increase in growth if sufficient time is allowed, and they can afterwards be stored for winter feeding, and at that time I have known the bulbs weighing as high as from twelve to fifteen pounds each with good cultivation.

Just before commencing this article, I find that Messrs. Sharpe, of Guelph, with their usual liberality, offer five dollars for the best twelve roots of green Kohl Rabi. Thus, I presume, as an encouragement to the cultivation of this root.

I would in conclusion say to all cultivators of field roots, try "Kohl Rabi!" The cost will be but trifling, should it not meet your approval.

I am, &amp;c.,

AGRICOLA.

County Wellington, 10th April, 1873.

## The Veterinary Profession.

A Veterinary Surgeon of ability and experience writes us as follows:—

"The veterinary profession in this country is comparatively speaking a new branch of medical science, but nevertheless one deserving of greater consideration than it now enjoys.

"Well knowing that it has ever been the object of the CANADA FARMER to advance the status of the agricultural interest in this country, and all connected therewith, I ask space for a few remarks upon this subject.

"Years ago, when this country was new, and consequently poor, qualified veterinary skill was not

easily obtained; in fact the ability of those who generally acted as veterinary surgeons was not of a nature to give them a very high place in public estimation. But time has changed all this, and in the greater number of our towns and villages, the services of competent veterinary surgeons can be obtained. It must be acknowledged then that it is very unfair that the contempt with which quacks and horse farriers of days gone by were treated, should be visited upon the heads of the properly qualified practitioners of an art so necessary to the agricultural classes. The branches which a veterinary surgeon is expected to study, and in which a fair share of proficiency is required, are of a nature to give him who possesses a knowledge of them, the standing of an educated professional man. He must study anatomy and pathology of the domestic animals, clinical and pathological demonstrations, physiology, chemistry organic and inorganic, toxicology, therapeutics, materia medica, pharmacy, hospital practice, operative surgery, and the principles of shoeing animals. Great and unmerited disgrace has been thrown upon the veterinary profession by the statements and action of itinerant horse farriers, who roam about the country professing to cure such incurable diseases as confirmed bone spavin, confirmed ring bone, and thus duping credulous farmers, who, after having lost their money to no purpose, console their wounded feelings by completely denying the existence of any such thing as professional veterinary skill and knowledge.

"I trust the day is not far distant which shall see in this country properly organized veterinary associations, for the purpose of discussing subjects connected with our profession."

## Rats.

S. H. Cowichan, British Columbia, writes to know how he can get rid of rats, a Chinese junk having lately arrived and supplied them in overwhelming numbers. From the thousand and one appliances for the destruction of this pest, the difficulty is to select those only that are known to be effective. We have tested a large number of so called "rat-traps," from the plain box article, open at both ends and baited in the middle, to the ingeniously constructed "Patent Automatic Rat Jerker," that successively stabs its victim, then tosses it to one side, and lastly resets itself, all in the short space of "a'f a jiffy," and our experience only confirms us in the belief that, as a rule, the more complicated the apparatus used, the fewer chances there are of success. The rat is very sagacious and cunning, and invariably gives a wide berth to everything that looks the least suspicious. Poison of various kinds has been resorted to with success, but this remedy is dangerous and objectionable, from the decay of the poisoned rats.

Scraps of tin or sheet-iron placed in their runs, will awaken suspicion, and if at the same time two or three are happily caught in a trap, the alarm will spread, a council will probably be held, followed by a general stampede from the premises. Chloride of lime scattered liberally about their haunts, frequently causes them to retire in disgust. Another effectual remedy will be found in the following mixture:—To 1 pound of melted lard add half an ounce of phosphorus, and a pint or so of good whiskey. Mix well, and when cold pour off the whiskey and stir into the residue, oat-meal or flour sufficient to bring the whole to the consistency of stiff paste. Flavor with a few drops of the oil of rhodium or anise-seed, and serve in shallow dishes.

Finely ground glass or porcelain made into a dough with flour, and flavored as before, is also very destructive.

Another simple method, much practiced in England, is to procure a large sized vessel with sides at least 2 feet in height—a wash tub of the proper depth answers admirably—and in it place oat-meal perched to a depth of about 2 inches. The rats will readily jump into the vessel, but the sticky clogging nature of the run will baffie all their attempts to jump out again. A dog or a cat will soon end the scene.

## Oil-Cake.

R. F. S., Sharon, writes us to know the merits of linseed oil-cake as a feeding material. Oil-cake made from flax-seed ranks with stock feeders as among the most valuable articles of cattle food, if not the most valuable. Experiments have proved that even the chaff of flax-bolls possesses the elements of nutrition in a very high degree. Palatable, easy of digestion, and of a cooling tendency, it is adapted alike to the sucking calf, and the aged sire, and indeed for all kinds of live stock. The seed should, when at all practicable, be thoroughly ground or bruised; water in the proportion of 1½ or 2 gallons to each pound of seed; flax should be added and the mass allowed to simmer for a couple of hours, stirring occasionally to prevent burning; when cold enough mix to each gallon two pounds of corn, pea or barley-meal, a sprinkling of salt, and a sufficient quantity of chopped straw to make a good ample feed. For fattening purposes, one pound of the flax-seed meal, and two pounds of either of the other kinds, well, with the straw, be quite sufficient, and this allowance may be given twice a day. Hay, or corn-stalks, or turnips can supply the intermediate meals. For ordinary feeding, the quantity may be lessened according to circumstances.

## Preparation of Carrot Seed.

In reply to a correspondent, the following plan is suggested:—About eight or nine days before drilling, the seed is placed in a bag, and steeped in water for forty-eight hours; it is then taken out and spread on the floor, about nine or ten inches thick, according to the temperature of the weather, care being taken that it does not get too warm. In about six or seven days it will have begun to germinate, and it is then time to put it in the ground by means of the drill.

J. McL., Owen Sound, writes to know if Northern Spy, or Grimes' Golden Pippin, would do to graft on Talman's sweet apple trees in bearing. Answer: The Northern Spy will not come into bearing even when grafted upon bearing trees as soon as the R. I. Greening, or Baldwin, or Golden Russet. Grimes' Golden Pippin is not large enough to make a popular market apple, though it is a fruit of excellent quality. Scions could be obtained of any of our leading nurseries. We do not advise every one to grow the Spy for market. Those only will succeed with it who give considerable attention to their orchard, and care for the trees by judicious pruning and fertilizing. Besides this, the fruit needs to be gathered and packed with great care, a slight bruise being followed by an unsightly blemish. There are very few apples that, on the whole, are as profitable to the planter as the Baldwin and Golden Russet.

A correspondent in Moulinette has a flock of sheep that pick the wool off their bodies with the teeth, and rub continuously against any object that presents itself. On examination there is observed a dense yellowish scurf which on loosening resembles fine dandruff or scales. No trace of ticks or parasites of any kind to be found. What is the remedy? Answer: Dress the irritated parts every second day with a little of the following lotion: "Corrosive sublimate two drachms, spirits of wine four ounces, and water one quart."

A. T., Angus, writes to know how to bleed a horse for the lamp. Answer: In bleeding the gums in cases of Jamp...a, make three small incisions towards the teeth; the one in the middle not to extend more than one inch backwards to avoid injuring the palatine artery.

BONE CRUSHER WANTED.—J. A., Westminster, B. C., writes us to inform him where he can purchase a small and inexpensive bone crusher or grinder. We are quite unable to give the desired information. Any manufacturer or agent who has such a machine for sale would consult his interests by advertising it in the CANADA FARMER.

Mr. Wharton Hedgoc, of Exeter has purchased the heavy draught imported stallion the *Dank of England*, from Mr. Peck, of the township of Stanley, who imported him. He is black, stands 17½ inches high, weighs 1975 lbs., and not yet 3 years old.

W. S., Exeter, writes us that from the milk of his five cows he made last season 950 lbs. of butter—although one of the cows was only milked four months, in consequence of an accident.

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The Canada Farmer.

TORONTO, CANADA, APRIL 30, 1873.

Red Rust in Wheat.

Mr. Mechi, of Tiptree Hall, never loses an opportunity of pressing on the agricultural mind of England any useful fact or information for the benefit of the farming interest that comes to his knowledge. He seems ever on the alert to extract wisdom from passing occurrences, he is always eminently practical, and it would be difficult to estimate the benefit he has conferred on the farming world. Mr. Mechi, does not confine himself to home questions, but when occasion serves, is ready to throw out a practical suggestion, affecting the colonial farming interest. His last good service in this way, we find in a letter addressed by him to the editor of a London paper, on the subject of "red rust in colonial wheat," and it will be seen that it contains valuable information for Canadian farmers. Here it is:

"In the Agricultural Gazette for June 8, 1872, I wrote as follows:—

"The following fact may prove interesting as regards the red rust which is so extensively injurious to the wheat crops in Australia and Canada. A very choice sample of wheat was sent to me from Canada, so, judging from former experience how inferior colonial wheat results on my farm, I only dibbled it on a part of two lands or stretches in the middle of a field drilled with Golden Drop English wheat. All went on luxuriantly until recently, when the two lands of Canadian wheat showed signs of red rust, and are now a shining red among the green. But they are evidently infecting the adjoining wheat, especially that close to them, and the red tinge is gradually spreading, so that I fear an acre or more may be damaged, and that it may prevent my being able safely to sell the Golden Drop for seed, which I intended to do. The fact is interesting, for we may safely conclude that the disease is in or on the seed, and that it is not so much a question of climate. I should therefore like to know, in the interest of our Canadian or Australian friends, whether they soak or steep their wheat, as we do, in a solution of sulphate of copper or some other dressing. I should imagine that they do not. Fortunately for the cause of comparison and discovery, we did not steep the handful of Canadian wheat sent to us; it is more than probable that if we had done so it would have been free from rust like the rest of my wheat crops. Those interested in colonial agriculture will be quite welcome to inspect the crop between this and harvest time."

"Since writing the foregoing, the colonial wheat referred to wasted and became worthless at harvest. The Golden Drop wheat on each side of it was of good quality and unaffected, although the tips of some of the leaves immediately in contact with the colonial wheat had an orange tinge. I consider it to be of immense importance to our colonies that the farmers there should steep their wheat and thus avoid rust and smut, for rust especially entails immense losses. A comparative trial, with and without steeping, would remove any doubt.

"We use 1 lb. of bluestone (sulphate of copper), dissolved in 10 pints of water, to each sack (4 imperial bushels) of wheat. The wheat is either soaked in the solution for ten minutes, or the solution is poured over and intermixed with it until it is absorbed. I have almost invariably found that wheat sent to me from our colonies became rusted and worthless. For the future I shall steep a part, and have another part unsteeped. The samples sent to me were of very fine quality.

"I should be glad to learn if any of my brother agriculturists have had experience with colonial wheat, and whether it was sown steeped or unsteeped? I have heard complaints that it requires acclimatizing, perhaps that may have reference to the residue of the crop in the sown having been steeped.

"The following is a striking instance of the necessity for steeping wheat: We sowed a headland with unsteeped wheat, and the crop of that headland was full of smutty ears. The rest of the crop, from the same seed steeped, was perfectly free from smutty ears. The following is the letter above referred to, together with my answer. They may prove of interest to your readers.

West Hill, Victoria Plains, Western Australia, December 13th, 1872.

"Dear Sir,—I am glad to hear of your acquaintance, I feel I am taking a liberty in writing to you, but trust the cause of my doing so may be a sufficient apology. We have been suffering from rust for several seasons past, but this last season has been most fatal. The crops in some parts of the colony are entirely destroyed, and throughout more or less affected, which will, it is feared, completely paralyze the exports of wool and other totally ruined. Believing your opinion on all farming matters to be the highest authority, and feeling that your advice at this crisis would be of eminent service to my brother agriculturists and well as my self, I am induced to write to you on the subject, in order, if possible, to discover some means of checking its ravages next season. I would also ask your opinion of the following:—Whether lime and salt spread on the land would be a healthy antidote to rust, and if so what proportion? When would it be used—as soon as the blade comes—just before it sprouts—or just before it comes out in ear? What kind of most subject? Is it principally attributable to the weather in the way of east winds and blizty clouds? Are there any means of checking it when at first slightly making its appearance? I will not encroach upon your valuable time with further questions, but hoping you will under the circumstances kindly add us with your counsel. I have the honor to be, sir, your obedient servant, J. J. Mechi, Esq. CHARLES CLINCH.

Tiptree Hall, Helvelon, Essex, March 6, 1873.

Dear Sir,—I refer you to the foregoing as a reply to your letter. I have had no experience with lime and salt, although I have heard of it being used as a dressing for the seed. The sulphate of copper is, as far as my experience goes, a certain preventative. I believe the mischief is in or on the seed. In England, we suffer most with blizle, or smutty ears where seed is unsteeped. The fine colonial wheat, which I have sown always promise well, and look healthy until the development of the head, and then become destroyed by the rust. In future I shall try a part steeped and unsteeped of any colonial samples I may receive—I am, dear Sir, yours truly, J. J. Mechi.

We commend to the best attention of our experienced farmers, these suggestions of Mr. Mechi. They arrive at a timely moment, when spring wheat is being sown, and a fair test of the effects of steeping the seed in Mr. Mechi's solution, ought by all means to be made.

The Advantages of "Forehandedness."

Some farmers complain that they are always behind with their work on account of not being forehanded enough to carry on their premises independently; that they have to help their neighbors in seed time and harvest before attending to their own farm interests, in order to procure funds to help to do their work. Now, the man who gets into this rut is destined to remain there just so long as he has not resolution enough to extricate himself by a change of practice. Rather than live in such a condition of servitude and self-robbery, he had better pay four times the real value of seed, tools and help, and mortgage to do it, and then keep fully up to time.

Here and there, all over the country, let the season be what it may, will be found every summer inferior fields of grain, the result of bad seed or late sowing, and spinning corn from late planting. In winter will be found upon these farms poor stock, because fed upon hay which was not cut until it had lost nearly all of its nutritious elements. The loss attending such management as this one year, should be a lesson to the one who suffers by it, but it is not, for as before stated, he thinks that his circumstances will not allow of a different course. The husbandman who is always behind time in his farm operations is, in addition to the inconveniences alluded to, subject to the tricks of sharpers in the commercial world. As soon as any article of produce is marketable it must, through the overpressing demand for money, be sold, let prices range as they may, and this subjugation of a class has an effect more detrimental upon the produce market than any other influence brought to bear upon it. So a whole community is afflicted by the inadvertency of a class.—Cor. N. F. Times.

Mangolds v. Swedes.

The late Lord Spencer conducted some experiments with the view of testing the respective feeding value of Mangolds and turnips, and as far as they go, furnish reliable information in favor of Mangolds.

His lordship says: "At Christmas I put two Durhams steers to feeding, the one upon Swedish turnips, the other upon Mangolds. I ascertained the weight of the steers by measurement:

- 1st. Month, No. 1. Fed on Swedes, gained 34 lbs., consuming 1,624 lbs.
No. 2.—Fed on Mangolds, gained 52 lbs., consuming 1,848 lbs.
2nd Month, No. 2.—Fed on Swedes, gained 14 lbs., consuming 1,889 lbs.
No. 1.—Fed on Mangolds, gained 32 lbs., consuming 1,884 lbs.
3rd Month, No. 1. Fed on Mangolds, gained 50 lbs., consuming 1,792 lbs.
No. 2.—Fed on Mangolds, gained 31 lbs., consuming 1,792 lbs."

The comparison between the increase of the two animals during the first two months should not only be observed, but the fact that when No. 2 was changed from Mangolds to Swedes in the second month, his growth was nearly stopped, but as soon as he was put on Mangolds again in the third month, he began at once to increase.

The more recent experiments on fattening cattle, by Colonel McDonall, of Logan, show that 75 lbs. of Mangolds produced equal results with 107 lbs. of Swedes, while that of Mr. McCulloch (Auchness), quoted by Dr. Anderson, analytical chemist to the Highland Society of Scotland, have led him to the conclusion that 40 lbs. of Mangolds are equal in feeding value to 40 lbs. of turnips. Morton, in his Cyclopaedia of agriculture, however, states that he scarcely thinks the majority of farmers will agree with the alleged superiority of Mangolds over Swedes for feeding purposes.

Weather and Crops in Britain.

The past has been another week of fine spring weather, and a great amount of field work has been satisfactorily accomplished. Seeding is now in a comparatively advanced state in England, the soil being in capital condition for sowing. The weather in Scotland has been favorable to spring work, which is progressing rapidly. Regarding the state of affairs in West Lothian the Scotsman remarks:—

"The weather during March has been on the whole favorable for spring work; the second week was very cold, with snow blasts, but the two last weeks have been good. There has not been much sunshine, and vegetation is backward; but with good weather now, the spring will be early enough. The arrows of ploughing have been got well forward; the beans were sown with a favorable tide; a beginning has been made with the seeding of land under white crop; and land which was ploughed before February is harrowing fine. The winter-sown wheat is looking very unequal on heavy soils; it is very thin, and some fields will have to be ploughed up. On free soils there are more plants, but they are weakly; altogether the appearance of the crop is not promising. Pasture grass has not made a start, and the fields look brown for the season. All kinds of stock are dear, lean cattle particularly so, being out of proportion to the even high price of fat. Grain markets have not moved much, though the demand for seed has raised prices for good samples of oats and barley."—London Farmer, 7th April.

Facts for Farmers.

A series of experiments instituted to test the average loss in weight by drying, show that corn loses one-fifth and wheat one-fourteenth by the process. From this, statement it is made that farmers will make more by selling unshelled corn in the fall at 75 cents than the following summer at \$1 per bushel, and that wheat at \$1.32 in December is equal to \$1.50 for the same wheat in June following. This estimate is made on the basis of interest at seven per cent., and takes no account of loss from vermin. These facts are worthy of consideration.—Exchange.

The profits of farming should consist, in a large measure, in the improvement of the farm itself and its belongings, and there can be no better investment than this. That is very poor farming, if worthy to be called farming, which, though it may nominally show a cash balance, leaves the homestead in a worse instead of a better condition than it found it.

Farmers' Clubs.

What one thing can we mention of more importance in the advancement, socially and intellectually, of the farmer than Farmers' Clubs? It is the isolated mode of life of the farmer, more than anything else, that is the great drawback of his attaining that great social position to which he is entitled by his moral worth and intellectual strength. His work-a-day life in the field with his hired man of inferior capacity to himself, prevents the polishing of the mind, for it is well-known that in dressing or polishing diamonds we must use tools equally as hard as the diamond, or there can be no polish given; just so it is with the mind. Mind must rub against mind in order to enlarge and strengthen itself. Books may do it to a degree, but books and papers alone do not put on the polish. Man must come in contact with man, and if there is a clashing of intellect all the better for the polishing process. The intellect of the solitary farmer bears a great resemblance to the ungrounded edge of the raw steel; there is in all its strength and metal, and true, but it lacks the keen cutting edge and the bright polish essential to be of use.

It is true the farmer can and does think (we all think and are thinking all the time during our waking hours) as he follows the plow, yet his thoughts are sluggish, dull, dry, or proxy, and need something to rub against to quicken and give them polish. Let this same farmer meet his equal at the post-office or village store, and his slow thoughts are quickened, he becomes quite a different man, and if his fellow has his own warrantia, both are infected and we shall see that they are capable of thinking with some acuteness for heat has no greater tendency to equilibrium than a man's vigor when mind meets mind. Whence comes the keenness of the broker, merchant, or city news-boy? It is not because of superiority of intellect or education, but rather from mental contact. In what the farmer wants, the men of trades, professions, &c., abound in. While the farmer is educated by his crops, trees, cattle, brooks, Sabbath sermon and weekly newspaper—all good teachers as far as they go—the city man or boy is by contact with living men. While the factory boy is proverbially cute, the farmer boy is more likely to be much less so, if not actually dull, the reason for which is as plain as daylight as from dark. Polished minds and polished manners can only come from intercourse with men, just as the quartz stone from the shore or sand bank becomes polished from being tossed and whirled among the sand and gravel. Now, the Farmers' Club is just the place where the farmer may get this rubbing. Here he can compare notes and observations with his neighbor farmer, and if he only commences to interchange his experience with others he soon becomes warmed up in spite of himself. But we do not mean he should attend the club as a passive listener merely, but as a participant in all proceedings. When such is the case it is wonderful how the mind and thoughts will be developed. It is scarcely possible but that there will be diversity of thought and opinion; and it is just this which brings out facts. None so humble but that he may add something to the stock of information; and it should be the duty of every member of the club to contribute his mite towards the general stock of knowledge. When every one comes with this intent and performs his part, ignorance, prejudice and narrow conceit, will be apt to ask for other quarters. Farmers, the long evenings of winter furnish the time for this meeting together and comparing notes and experiences; by thus doing you benefit the head and the heart; cultivate the sweet charities of life, become better neighbors, better citizens and better farmers.—HARRY, in *Germania Telegraph*.

Profitable Farming.

There are too many men who put their all in a single venture, and if that fail are utterly wiped up. There is perhaps no business wherein "two strings to one's bow" are so important as in farming. Other pursuits have certain rules which have been founded on experience, and which the shrewd man of business can take advantage of with an almost assured certainty of success. But we cannot do this. We cannot tell what will happen to our crops. Sometimes it will be over dry, sometimes over wet; sometimes we are plagued with swarms of insects, at other times we are afflicted with blights and mold. Against none of these things do we get the slightest hint. Trouble never strikes everything alike. Some will succeed. But, independently of all this, the young farmer should never be cast down by misfortune. It is here where so many fail. We know one, once, who had made by city work some eight thousand dollars. He had originally been brought up on a farm and had always made up his mind to return to it as soon as he had accumulated enough to warrant him

in making a start. But he put away two thousand dollars, and invested only six in the farm and stock. It so happened that the next two years found him in terrible losses; but they brought experience, and he fell back on his small reserve, and this, with his new experience, gave him a new and good start. It is not so long ago, but he now considers himself worth about twenty-five thousand dollars, and is one of the most ardent advocates of the position that farming will pay.—*Germania Telegraph*.

What shall we Cultivate?

The question that is puzzling many a farmer this spring. Follow the crops grown last year did not command a remunerative price, and there is much speculation as to what changes are necessary to produce a better result in the cash receipts of the farm this present season. It is certainly a safe plan to look ahead and make calculations as to what kind of crops one can cultivate with profit, but it is not best to change too readily; for an article that sells at a low price only to advance likely to advance the next crop, because it is so used as well as cultivating it when it is the price commences again when it is dear. A man who is anxious to take advantage of the fluctuations of the market, the low man, is the one always in market with a large crop when there is a scarcity and prices are correspondingly high.

There are three distinct classes of agriculturists found in every community. First, those who pursue a steady system, one crop always raising the staple crop best suited to the soil and climate, never varying the quantity or quality, no matter how great the fluctuations in price. They win when high prices rule, and perhaps lose little when they are low. But in the long run we think this class is the most prosperous. We have known farmers to cultivate a certain number of acres each year with a particular kind of crop, to load it every year, the quantity more than an acre or two, for twenty years, and thus proved to be a profitable system.

Secondly, those who watch the markets throughout the country and make changes as often as it appears to be advisable. When certain products are very low in price they begin to cultivate, expecting enough will raise to raise them to send up the price. An overstock of beans, onions, cabbages, or other vegetables, or of grain, is a hint that there will be a scarcity the following year. A man who does not visit the markets or read an agricultural paper need not attempt to become one of this small class of prosperous farmers.

But the most numerous class we place as one-third, which includes the many thousands who are always undecided what to do, but continually change from one thing to another. This year they believe sheep will be more profitable than cows, and a change is made and a good flock secured by the time wool and mutton are down to zero in the market. Then next year they will go back to the cows, and butter or cheese making just in time to find wool up and dairy products low. They are the unlucky part of the human race, and are always swindled by middlemen, as they call those who purchase their products.

In deciding upon crops to cultivate the coming season, we advise putting in only those which can be well taken care of without being placed at the mercy or caprice of untrustworthy floating laborers. We know that farmers in localities where wheat is the only crop that commands ready cash, will think they must sow a certain number of acres in order to pay their debts next fall, but would it not be better to sow a less area and do it in the best manner, instead of going over a large space to get a little, with a corresponding increase of labor in harvesting? Every farmer should adopt some system by which he can be master of the situation, even if he does not cultivate more than a dozen acres.—*New York Sun*.

—A correspondent of the *Rec Journal* says that bees are fond of water-melons. He left them in the field, cut in two, and the bees took most of the inside out.

—It is not muscle that produces the crop which carries off the top price in market, but brains. It is care, attention, with brains, that are required—more head work than hand work.

SCIENTIFIC FARMER.—The man who produces the largest yield to area cultivated, with the least expense, and increases the fertility of the soil, is the most scientific farmer, however ignorant he may be of the fact.—*Rural Southland*.

—Dr. Hall asserts in the *Prairie Farmer* that the simple use of soft soap, put on hot, is quite as effectual against the borer, for the exclusion of the moth from laying her eggs in the bark, as the carbolic soap, and not one-eighth as expensive.

Keep Your Farm.

Lately visited at a farm-house where the aged grandfather was the sole proprietor. Some half-dozen years before, a son had returned with his family to work the farm and take care of the old gentleman for their maintenance in his days. The place was very "old fashioned," but "father liked it," and no nothing was changed. The family drew water from the well in an "iron-bound bucket" attached to a "well-sweep." A colony of white hens, some nine or ten years old, roamed at will about the barn. They had been "grandmother's pet" six years ago, and "grandfather could not bear to have them killed." The stock sorrel horses were grandfathers, and when the young man wished to use them, he always asked father if he was willing he should take them and the carriage, specifying the distance he wished to go. At table, all possible pains were taken to make the old man comfortable, and see that his wants were well supplied. That worthy grandpa was never missing, and his cup of tea or coffee was replenished as quick as it became empty. He was very deaf, but his questions were always answered with the greatest promptness. I could not but observe the marked contrast between his household and others I had seen, where the father had given up all his property into the hands of a son, and left himself in his old age a pensioner on his bounty. No matter how kind and affectionate your children are, they will love you none the less for keeping your property in your own hands during your lifetime.—*Farmers' Union*.

Farmers Writing for the Press.

In writing articles for publication do it in the fewest words that will make your meaning plain. When you have done this, stop. You may perhaps find something in it that you may condemn, perhaps to alter, possibly something to add. Never let incorrect spelling or bad grammar deter you from writing, if you have important facts to communicate or what you consider such. The editor is always ready and willing to correct errors for the sake of the facts; but mere literary efforts will generally be consigned to the waste basket, if they require very much correction, unless they contain original ideas also. An editor must judge of what will be of interest and value to his readers; it is his business to know that which he has spent years in studying. Ideas should be expressed in as short, terse and comprehensive language as possible; and are always valuable, as being the result of practical experience. All farmers know how to conduct the ordinary operations of the farm. All however do not accomplish these processes alike, or in the most economical manner. It is this difference which makes the successful and unsuccessful farmer. Facts relating to these operations are never too much trouble for an editor to correct.—*Ec*.

Fun at Home.

Don't be afraid of a little fun at home, good people. Don't shut up your houses lest the sun should fade your carpets, nor your hearts lest a hearty laugh should shake down some of the musty cobwebs there. If you want to ruin your sons, let them think that all mirth and social enjoyment must be left on the threshold when they come home at night. When once a home is regarded as only a place to eat, drink and sleep in, the work is begun that ends in gambling houses and degradation. Young people must have fun and relaxation somehow. If they do not find it at their own hearstones, it will be sought in other, and perhaps less profitable places. Therefore let the fire burn brightly at night, and make the home ever delightful with all those little arts that parents so perfectly understand. Don't repress the buoyant spirits of your children; half an hour of merriment round the lamp and firelight of homeblots out the remembrance of the best a care and annoyance during the day, and the best safeguard they can take with them into the world is the unconquered influence of a bright little domestic sanctum.—*Ec*.

A Scrap Book.

Every farmer should keep a book in which to paste agricultural scraps. Every one, in reading a paper, will see a number of things which he will wish to remember. He will perhaps see suggestions, the value of which he will desire to test, or hints which he will want to be governed by in future operations. And yet, after reading the paper, he will throw it down and will probably never see it again. In such a case all the valuable articles will be lost. To prevent such a loss, every reader should clip from the papers such articles as he desires to preserve and remember, and paste them in a scrap book. Such a book, at the end of a year or two, will be interesting and valuable.—*Ec*.

## Veterinary Department.

### Royal Veterinary College, London.

This quarterly document, addressed to the Council of the Royal Agricultural Society of England, by Prof. Simonds, always contains matter of much interest, both of a scientific and practical character. The report ending for the last quarter of the year, 1872, published in the society's journal, has just reached us, from which we select the subjoined facts and statements, partly condensed, for the information of our readers.

#### Foot-rot.

The unprecedented rainfall of the last four months of the past year was attended by a more than average temperature, so that few diseases incident to live stock from wet and cold, occurred in the British Islands. Serious apprehension, however, is expressed that the high temperature, combined with so long a period of almost continuous rains, might inaugurate the most fatal malady to which sheep are liable. The "rot," a disease to which sheep in so dry a climate as that of Canada are but little subjected. The general drainage of wet pastures in England of late years, has been in a great measure efficient in mitigating, if not preventing, this most destructive malady. It is recommended to give sheep as much dry and nutritious food, mingled with a small portion of salt, day by day, as will keep up the strength of the animal's constitution, and be prophylactic against the liver-fluke, upon which the disease depends. The "foot-rot," which is sometimes troublesome in Canada, is quite a different and comparatively harmless thing, and the proper treatment of which is pretty well understood. Formerly, whole flocks were nearly destroyed, now and then, in the rich, wet pastures of England, by the "liver-rot."

#### Tape-worm.

Parasitic diseases having of late years so much increased in Britain, and being at present involved in great obscurity, as to their nature and treatment, the Governors of the Royal Veterinary College have recently established a new professorship with almost exclusive reference to their investigation. Dr. Cobbold, who holds the chair, is now daily engaged in delivering lectures to the students, and in conducting experiments. Very recently, a calf and lamb had administered to them several segments of those varieties of tape-worm, well filled with matured ova, on which the so-called "measle," or rather "mizzle" of beef and mutton are believed to depend. The "measle" is in reality an embryotic tape-worm, or a tape-worm in its larval or hydatid stage of development from the ova, which, on entering the digestive organs of man, in its living condition in beef or mutton, quickly matures into the perfect entozoon, often many feet in length. A period of three months, at least, is necessary for the development of hydatid embryos from the ova; and should success in these cases attend the exhibition of the ova, it may be hoped that the experiments will be sufficiently complete to be communicated to the society in the next quarterly report.

The Lincolnshire Agricultural Society has commenced a searching inquiry into the ravages of the *Strongylus bronchialis*, which has often been destructive of lambs in that county, and from certain experiments now in course of being made on the natural history of this parasite, much valuable information of a practical character is expected to be elicited. It appears that calves especially have greatly suffered in some districts from the attacks of this parasite.

#### Lung-worm.

Referring again to the lung-worm of the calf, it may be stated that the parasite gives rise to the disease commonly known by farmers as the "hoose or huck," from the peculiarity of the cough of the affected animal. The malady is accompanied with great emaciation of the animal, so that death not infrequently results from inanition and persistent irritation, as well as from the structural changes which take

place in the lungs. The cure lies chiefly in the early destruction of the worms, and for this purpose medicated inhalations are of essential service. These are best supplied by burning tar in a shed, in which the calves are temporarily confined, and casting sulphur on the flame from time to time, care being taken that there is a sufficiently free access of air to prevent suffocation. The exhibition of oil of turpentine, tincture of asafoetida, decoction of savin, and other allied agents, will also effect much good. To these remedies should succeed tonics, both mineral and vegetable, of which the preparations of iron and the barks are the best.

#### Epizootics.

**Cattle Plague.**—A recent outbreak of this terrible scourge occurred in the east riding of Yorkshire, from cattle exported from Russia. The infection spread from the port of Hull, having it is believed reached the cattle-market of that place by persons passing between the markets and the ship while lying in dock with the diseased cattle on board. It is worthy of note that both in 1865 and 1872 the disease was imported into England by affected cattle from Russia; At the date of the report the country was considered free of cattle plague, as no fresh cases had occurred for two months. "The fields had been top-dressed with lime, the sheds disinfected, and fresh cattle brought to the premises."

**Pleuro-pneumonia.** This disease was considered to be rather on the increase, attended by many fatal cases, and producing great deterioration in the condition of cattle in several districts. Two causes especially are in operation to keep the disease rife, viz., a desire to treat the animals rather than to send them at once to the slaughter-house, and a disposition to conceal from the authorities the existence of the malady on the farm. Pleuro-pneumonia possesses properties which differ in many respects from those of other infectious cattle-diseases; and doubtless the so-called cured animals an often dangerous foci of infection to others. It may not be a difficult problem to fix the time of the commencement of infection, but when the *materies morbi* cease to emanate from the diseased animal, or to be so changed as to be non-productive of mischief to others must be purely conjectural. The true policy of the agriculturist is therefore to send for slaughter every animal, the subject of pleuro-pneumonia, or as early as possible after the declaration of the disease.

**Foot and Mouth Disease.**—This troublesome malady every now and then is reproduced and occasions much anxiety and loss to the stock-breeder. Severe and long-continued as the recent outbreak of foot and mouth disease has been, it has thrown no additional light on the pathology of the affection, nor on the laws which govern its extension. The facts developed to-day are identical with those which existed in 1839, when the first cases of foot and mouth disease were observed in England. The years 1840 and 1841 witnessed the same malignancy and the same victims of the malady, viz., cattle, sheep, and pigs, as the disease is again on the decline, so that ere long we may hope it will assume that which may perhaps be called its normal condition.

The fatality of this affection is small and the agriculturist should take care that he does not increase this, nor protract what would otherwise prove speedy natural cures by too great a desire to dose animals with medicinal agents. Care in protecting the diseased animals from inclement and all extremes of weather, and good nursing, are the principles which should rule in the management of animals affected with the foot and mouth disease.

### The Sheep Bot.

D. M. F., Harper's Corner, Bathurst, writes as follows:—

"A number of my own and neighbor's sheep are affected in a peculiar manner, and one of mine died a short time ago, after an illness of 6 or 7 days. An incessant shaking of the head, with a moderate but constant discharge from the nostrils are the more prominent symptoms of the disease, while a post mortem examination of the head reveals the existence of a small, white, pointed grub, which is supposed to be the cause of the evil. Would you kindly inform us through the CANADA FARMER what the trouble is, and at the same time suggest a remedy."

**NOTE BY EDITOR CANADA FARMER.**—Your sheep appear to be affected with a parasitic affection of the nose, which is sometimes designated the Sheep Bot. We would recommend you to feed the sheep daily with a little linseed meal or oil cake with the view of strengthening the system generally. Give

one half ounce of oil of turpentine with two ounces of linseed oil, every second day until three doses are given, and be careful to mix the two ingredients of the drench thoroughly. The nostrils and face should be well bathed with tepid water daily for several days. The inhalation of the fumes of iodine, chlorine, etc., is also beneficial.

### Driving Colts.

If the colt is at all uncertain, it will be policy to work slowly and carefully, as one mis-move now may cause serious mischief, by the colt becoming nervous and unmanageable, and should he be able to resist restraint, will easily cause a loss, by damage to wagon, of from five to fifty dollars. To guard against this, get three slender poles, two of them about twelve feet long each, the third about seven feet in length. Lay down the poles in the form of shafts, the front ends about twenty inches apart, the back about six feet apart. Lay the short pieces across, about six feet six inches from the forward ends, and tie on with pieces of cord. Hitch the colt into these poles, attaching tugs to the cross pieces by tying with small cord, and drive the colt around until there is perfect submission to them. Driving to poles is an advantage step, for two reasons; they cause less noise and excitement, and consequently are less likely to cause resistance; and should the horse kick, no danger can result—whereas one kick against a buggy would be likely to cause serious damage and loss.

Before attempting to drive a colt to the wagon or shafts, all danger of resisting anything striking the heels should be thoroughly overcome by the course of subjection. It is always the safest and best method. Anything like a suitable cart or two-wheeled sulky can be obtained but by few, and the ease of constructing poles into the form of shafts will enable any one to easily supply the want.—*Prof. Magner.*

### Salt Brine for Lice.

In answer to many inquiries for a remedy for lice, the *Rural World* states that an application of brine, as strong as can be made, is a certain remedy. It will kill the lice outright, but not always the nits; hence a second or third application is required to be effectual. Hogs are greatly pestered with lice, and they should be destroyed. Watch the colts and calves carefully, and if you see any failing, look out for lice. A close inspection will reveal hundreds of them feeding upon the poor animal. An application, on a warm day, of brine will bring great relief. A decoction of tobacco applied will also rid the animal of these pests. A thorough greasing is also a remedy. Don't let the poor animal suffer. These applications are as good for human beings as for brutes. The above remedy has the merit of being a safe one, that can do no injury to the animal, even if it fails to exterminate the lice.

### How to Water Horses.

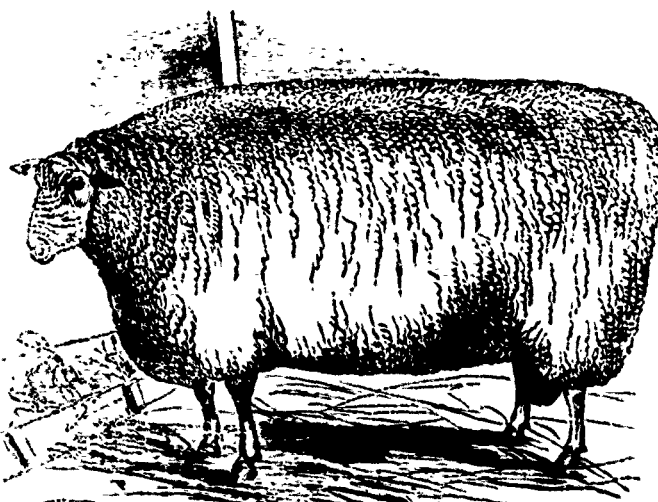
One writer says, never water immediately before or after feeding. I say that if a horse is thirsty, always give him drink, and he will thank you for it. I have often seen horses put in the stable at noon for an hour or two, and not eat a pound of hay or grain, but looking wistfully for water, and then their careful owner, who would not let them have water when warm, will come to give them enough to kill, and drive the remainder of the day on two buckets of water and no feed. Ten chances to one his horse gives out with him or gets sick before night. Now, say, give the horse water, if he is ever so warm; give him a swallow, rinse out his mouth and nostrils, give him a bite of hay, in a short time a little more water, but not too much. If he is watered several times, a little at a time, until he is satisfied, he will not drink more than half what he would if you let him gulp it down all at once.—*Cor. Tribune.*

**HORSES' FEET—SWELLING.**—On this subject the *Prairie Farmer* says: "If swelling is accompanied by heat and tension of the parts, and more particularly by cracked heels, then mild aperients and fomentation is a good beginning; but where any flaccidity exists, stimulants and tonics we have found the sovereign remedy. Take of powdered sulphate of iron, one ounce and a half; powdered gentian root, two ounces; nitrate of potassa, one ounce; mix and divide into twelve powders, and give one night and morning mixed in cut or soft feed, with no more water in the feed than will keep the particles together. Feed the animal generously and well, and give a little exercise daily.

# Breeder and Grazier.

## Lincoln Sheep.

The Lincoln sheep are fairly entitled to be regarded as the premier sheep of England, in reference to ancestry; but the original type of a Lincoln has completely disappeared in the improvement of the breed effected by the judicious introduction of Leicester blood. The old Lincolns, were very ungainly animals, and are described as without horns, with white faces, long thin caeca set of the razor-back order, thick, rough, white legs, large bones, thick pelts, producing in spite of bare bellies and legs, heavy fleeces of wool weighing from 8 lbs. to 16 lbs. with a staple of from 10 to 13 inches. Indeed, at that period, the chief, if not sole merit of the Lincolns consisted in the immense weight and peculiar texture of their fleeces, making them a profitable breed to graziers in the lowlands, such as the Lincoln fens. The extraordinary success and popularity of the Leicesters, under the wondrous influence of Bakewell speedily attracted the attention of Lincoln breeders, (between whom and the Leicester men there had been for many years a formidable rivalry), and the result was the introduction of the new Bakewell Leicester blood to Lincoln flocks, with the view of the latter breed attaining greater purity and a more symmetrical form and so successfully has this been accomplished that the original type of Lincoln may be pronounced extinct. The modern improved Lincoln exhibits many of the good qualities of both Cotswolds and Leicesters, evidencing the extensive frame and noble appearance of the one, with the quality of flesh, compactness of form, graceful countenance and disposition to fatten of the other, and surpassing both breeds in the weight of fleece. Mr. I. Algernon Clarke, a noted Lincoln breeder in England, mentions some very interesting particulars in connection with the wonderful produce of wool from Lincoln sheep. For instance, one farmer near Wisbeach grazed 219 Lincoln hoggets, and 40 Lincoln shearlings and the 239 fleeces averaged 12½ lbs. per fleece. In 1862, a two shear Lincoln ram clipped by Mr. Bond, of Yarborough, yielded a fleece of 237 lbs., and as remarkable for length and fineness of staple as for actual weight. Mr. Clarke, senior, prize lamb at the Lincoln Royal Meeting of 1854, clipped 51½ lbs. of wool in three years or an average of 17½ lbs. per fleece. At Battersea show, Mr. Clarke exhibited a hogget (16 months old) fleece on the back of the sheep the length of the staple of which averaged about 17 inches, and also possessed a staple of wool from a ewe hogget which was 24 inches, and another from a ewe, bit of more than two years' growth, which was no less than 40 inches in length. Mr. Clarke also remarks that in districts where Cotswolds, Leicesters and Lincolns, have been tried together, the latter have fully maintained their rivalry in the value of wool and mutton together produced per acre, and that no other breed can furnish such big and heavy skinned lamb hogs suitable for the grazier. So long ago as 1826, Mr. Dawson, of Withcote, killed a three shear sheep weighing 96½ lbs. per quarter, a two shear weighing 91 lbs. per quarter, and a shearling 71 lbs. per quarter. Mr. Robt.



LYNOLN RAM.

Smith in his report of the Royal show at Warwick, some half dozen years ago, states that he has known 14 months old lamb hogs, together averaging 35 lbs. per quarter, and one hundred together, clipping 14 lbs. of washed wool each. At the age of 22 to 28 months, Lincolns, on fair ordinary feeding will yield a carcass of from 30 to 40 lbs. per quarter and cut a second fleece from 10 to 14 lbs. The Lincoln breeders consider the mutton of superior quality, having less fat and a greater proportion of fine grained lean flesh than the Leicesters. The ewes are good breeders, but are said to be indifferent sucklers, as indeed is two frequently the case with ewes of either the Cotswold or Leicester breed. Lincoln wool is much esteemed for its peculiar properties of length, strength, lustre and brightness, placing it in the front rank of what is well known to sheep farmers as "combing" wools. Lincoln wool enters largely into the manufacture of "alpaca," "cobourgs," and various fabrics composed of cotton and wool mixtures; and the "gloss" which is given by this description of wool meets with such unqualified admiration as to have become a rage and fashion for both gentlemen's garments and ladies' dresses. The product in thread or cloth from a fleece of wool is something astonishing. A 20 lb. Lincoln fleece used

as an admixture with cotton in the finest alpaca fabrics suffices for upwards of twelve "pieces" of 42 yards in length, or a total of 672 yards, 3 feet wide, and sixty years ago. A Miss Ives, at Spalding, spun 168,000 yards or about 95½ miles of woollen thread from a pound of wool of a Lincoln ewe. The Lincolns are now-a-days travelling far beyond their native haunts, having of late years been exported in considerable numbers to the grassy plains of Australia, where they have become great favorites with many of the extensive sheep-farmers of that immense sheep country. In Canada also they are rapidly establishing themselves in the high estimation of our sheep-breeders, and at several of our principal exhibitions have acquired such importance as to demand and secure a distinctive position in the prize list. We hope to hear of extensive importations, and the wide spread diffusion of this valuable breed amongst our numerous and enterprising agriculturists during the present and future seasons.

**CASTRATING LAMBS.**—A correspondent of the *Country Gentleman* says:—Castration of lambs should take place about fourteen days after birth, on a mild, damp morning. This age is the best; the older the lamb gets the more difficult and dangerous does the operation become. Growth is not in the least interfered with at the age above mentioned.

## Short-horn Intelligence.

Messrs. John Snell & Sons, of Edmondton, have recently sold to Mr. R. Clarke, Griersville, the yearling bull *Thornton* by *Joe Johnston* from *Gentle Annie*; also to Mr. James Gardhouse, Hightfield, Etobicoke, the yearling heifer *Blooming Belle* by *Joe Johnston*, and the heifer-calf *Fairy Girl* by *Louden Duke*; and also to Mr. D. H. Garbutt, Malton, the cow *Gentle Anna* and her heifer-calf by *British Baron*, the cow *Peggy 2nd*, and her bull-calf by *British Baron*, and the 2-year heifer *Princess Rosa* by *Prince Imperial*.

The sales of Dutch cow and heifers of the Glen Flora Association at Waukegan, Ill., on the 9th inst., were as follows:

1. Miss Wiley of Glen Flora; calved February, 1869	\$300
2.—2nd Miss Wiley; calved March, 1871	675
3.—3rd Miss Wiley; calved March, 1872	655
4.—Henrietta (imported) May, 1867; dam <i>Ferona</i> , by <i>Duke of York</i> (1775)....	2,000
5.—Countess of Oxford (imported) Jan., 1869; dam <i>Countess</i> , by 2nd Earl of Oxford (2384).....	2,000
6.—Fruil (imported) Nov., 1869; dam <i>Fanny</i> , by <i>Genl Napier 2nd</i> (2402).....	1,050
7. Blush; Feb., 1870; by <i>South Duke of Genoa</i> , 7937.....	755
8.—Miss Rose; April, 1868; by <i>Welshman</i> , 5269.....	1,610
9. Little Miss; 1st October, 1873; by <i>Miss A.</i> , 6236.....	955
10. Ely; 25th Octob., 1872; by <i>Baron Gwynne</i> , 11457.....	500
11. Young Miss; April 10, 1873; by <i>Baron Gwynne</i> , 11457.....	500
12. ".....	500
13. ".....	500
14. ".....	500
15.—3rd Earl of Oxford; 1872; by <i>Baron Gwynne</i> , 11457.....	415
16.—Sally; 1873; by <i>Baron Gwynne</i> , 11457.....	360
17. Countess of Oxford; 1872; dam <i>Countess</i> , by <i>Baron Gwynne</i> , 11457.....	625
18. Genl Napier; 1872; by <i>Baron Gwynne</i> , 11457.....	510
19.—Major Napier; 1872; by <i>Baron Gwynne</i> , 11457.....	375
20.—Margaret; 1872; by <i>Baron Gwynne</i> , 11457.....	340
21.—Twilight; 1872; by <i>Baron Gwynne</i> , 11457.....	300
22.—Trix; 1872; by <i>Baron Gwynne</i> , 11457.....	215
23.—Lady Brough (imported) Oct., 1869; dam <i>Nellie</i> , by <i>Baron Gwynne</i> .....	1,650

Total for 24 females..... \$18,715  
Average..... 780

The bulls brought the following prices:—

24.—Scotsman (imported); 27th February, 1868; dam <i>Comet</i> , by <i>Royal Error</i> , (22780).....	\$1,000
25.—Major Napier; July, 1872; sire imp. <i>General Napier</i> (26239).....	355
27.—Col. Napier; July, 1872.....	495
28.—Baron Lancaster; July, 1872; dam imp. <i>Booth's Lancaster</i> , by imported <i>Baron Hubback 2nd</i> (13190).....	305
29.—Minister Napier; April, 1872; dam <i>Minister's Gem</i> , by <i>General Napier</i> .....	300
30.—Bismarck (imported); January, 1871; dam <i>British Beauty</i> , by <i>Bentley</i> (28016).....	1,110
31.—Blandy.....	230
32.—Baron Bertram; November, 1872.....	250
33.—Baron Oxford Gwynne; Nov., 1872; dam <i>Oxford Gwynne</i> , by imported <i>Scotsman</i> .....	330
34.—Baron Gwynne 4th; May, 1872; by <i>Marquis of Genoa</i> , 10451.....	290
35.—Oxford Prince; March, 1872; by <i>Oxford Duke 4th</i> , 10374.....	255
36.—White Cloud; June, 1872; by <i>General Napier</i> .....	405
27.—Cardinal; October, 1872; by <i>General Napier</i> .....	85

Total for 13 males..... \$5,860  
Average..... 446  
Average of 37 males and females..... 663

The following Short-horn cows and heifers, the property of Mr. W. B. Dodge, of Woodlawn, Waukegan, Ill., were also sold at the Glen Flora auction sale, on the 9th inst:—

1.—Mariska of Woodlawn; calved Feb., 1867; dam <i>Mariska 2d</i> , by <i>Second Duke of Genoa</i> (23782).....	\$1,600
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2.—Second Mazurka of Woodlawn; Sept., 1868; by the Duke of Airdrie (23715)	675
3.—Third Mazurka of Woodlawn; Feb., 1872; by Fourth Earl of Oxford...	400
4.—Third Lady of Clarke; March, 1869; by Eighth Duke of Airdrie	675
5.—Fifth Lady of Clarke; Dec., 1871; by General Napier	450
6.—Carlotta 2nd., March, 1870; by Seventeenth Duke of Airdrie	300
7.—Rose of Racine; April, 1870; by Thirtieth Duke of Thordale	520
8.—Jubilee of Woodlawn; Nov., 1871; by Red Rover, 6105, from Jubilee 8th.	910
9.—Jubilee 8th; April 1862; by Clifton Duke	400
10.—Jubilee 9th; January 1864; by The Priest, 6246	660
11.—Jubilee Napier; January, 1873; by General Napier	615
12.—Constance of Woodlawn; Aug., 1869; by Royal Duke of Oxford; (25,021) from Constance 2nd.	575
13.—Vesta; April, 1870; by Seventeenth Duke of Airdrie	810
14.—British Lady, roan, 2½ years, George Greer, Newcastle, Penna.	720
15.—Fanny Van Meter 1st, red, 8 years, W. M. Latimore, Abington, Ill.	415
16.—Fanny Van Meter 4th, red, 2½ years, J. C. Layman, Franklin Grove, Ill.	425
17.—Francie 13th, white, 7 years, Capt. Blake, Lowell, Ind.	210
18.—Francie 14th, roan, 6 years, Lyman West, Rio, Knox Co., Ill.	310
19.—Francie 15th, roan, 6 years, J. W. Stewart, Rock Falls, Ill.	255
20.—Francie 17th, red roan, 7 years, W. H. Richardson	335
21.—Francie 18th, red roan, 4 years, R. Gibson, London, Canada	320
22.—Nell 4th, roan, 6 years, Wm. Stewart	260
23.—Oxford Beauty, 20 mos., J. N. Daines	300
24.—Oxford Belle, red roan, 1 year, Messrs. Day	220
25.—Oxford Maid, red roan, 1 year, Willhoit & Son, Mechanicsburg, Ind.	300
26.—Oxford Queen, red and white, 1 year	265
27.—Oxford Gem, roan, 8 months, S. W. Jacobs, West Liberty, Iowa	200
28.—Oxford Lass 4th, red roan, 7 years, J. L. Moore, Polo, Ill.	325
29.—Ellie, red, 4 years, Messrs. Day	620
30.—Elsie, red, 4 years, G. J. Hagerty	1,010
31.—Pride, red, 3 years, S. Aikman & Son	755
32.—Minna Dodge, red, 8 years, S. Aikman	730
33.—Minna Napier, red and white, 10 mos.	700
34.—Julia 2d, red roan, 11 years, M. H. Wilson, Menomonee, Wis.	230
35.—Julietta, roan, 14 months, Messrs. Day	350
36.—Capitola 2d, roan, 6 years, David Wilson, Round Grove, Iowa	255
<b>Bulls.</b>	
37.—Minna Dole's Airdrie, red, 4 years	480
38.—Master Mazurka, red, 13 months	350
39.—Oxford Airdrie, red roan, 19 mos., Joel Franklin, Lexington, Ill.	450
40.—Royal Napier, rich roan, 18 months, J. N. Daines	510
41.—Royal Airdrie, red, 9 months, W. M. Latimore	205
42.—Railway, white, 13 months, W. M. Latimore	110
43.—Oxford Duke, roan, 13 months, W. F. Dunbar, Caledonia, Minn.	205
44.—Oxford Prince, roan, 12 months, J. L. Moore	255
45.—Oxford Lad, red and white, 12 months	205
46.—Woodlawn Chief, roan, 5 months, Alex. Charles, Taylor, Ill.	200
47.—Oxford Chief, red roan, 11 months, J. M. Wood, Factoryville, Neb.	370
48.—Oxford Hero, roan, 11 months, A. G. Hardell, Dawson, Wis.	200

Summary.

36 Cows averaged \$491.11—total	\$17,680
12 Bulls do. 276.66 do.	3,520
48 head do. \$441.66 do.	\$21,200

**OIL FOR IMPLEMENTS.**—As a rule, the more expensive the oil, the better. For all practical purposes however, good olive oil can scarcely be surpassed—certainly not by any other at the price.

**Ringing a Bull.**

In the London English Farmer a plan is suggested for putting a ring through the nose of a bull worthy of the attention of stock-breeders. A ring is undoubtedly the safest mode of controlling the bull. Clamp rings having two knobs which press into the nostrils, may be useful for occasional use—but a good stout copper ring should be put through the cartilage of the nose of every thorough-bred bull before he is a year old. This will last him for his life-time—and whether tied up in the stable or out for exercise, it will effectually control him.

The old fashioned plan of inserting the ring, was by burning a hole through the cartilage with a hot iron—but this a cruel and difficult process. The plan suggested by the Farmer is to use a weapon styled a trochar, similar to the surgical instrument employed for "tapping" in cases of dropsy, and for "hoove" in cows. It is a sharp-pointed, round dagger (the point three-sided), carrying a silver-plated shield reaching from the upper part of the point to the handle. Here it is:—



Trochar and Sheath.

The sheath being on the dagger when the operation is performed, the whole is easily pushed through the nose, the sharp point of the dagger piercing the nostril with so little pain that one man can easily hold the head still. The dagger is then withdrawn, leaving the sheath in the hole. The ring is then inserted into the end of the sheath, which is slowly withdrawn, leaving the ring in place. This is then closed and fastened with a screw. These rings should be so well made that both the hinge and the screw should be perfectly smooth, and so fitting as to take a practised eye to notice the joining. The manner in which the operation is performed, will be seen at once from this engraving:—



How the operation of ringing is performed.

The ring should turn freely round in the incision, which having been made with a three-cornered cut, will be more sensitive against a pull than the smooth-burned hole. Indeed, it is sometimes necessary, with the latter cruel operation, to take the ring out after a time and resort again to burning, in order to make the cartilage sufficiently sensitive for the ring to be effective in managing the animal.

**How to Educate Animals.**

To educate an animal is not to force its nature, but to tame and direct it, so as to make it fit for the service or the society of man. This is not a very difficult task for one who knows how to go about it. Most animals are drawn toward man, whose superiority they recognize by instinct, whom they are proud to please, whose love is agreeable, and whose protection is advantageous to them. But before these relations are established, there is an obstacle to be conquered—the distrust natural to the lower animals. The first step to be taken, then, is to secure the pupil's confidence. Unhappily, many do just the contrary of what is necessary to secure this end. Some brutal men know only how to maltreat their animals, which do not obey because they do not

understand; other men make playthings of them, and others fatigue them with importune caresses. Do none of these things. What an animal demands is security. Never harm him, and you will have his confidence. When your first relations are established he will come to be caressed of his own accord. Always be careful of him, but without feebleness or importunity. Never tolerate a vicious act; never allow yourself to be defied; but be indulgent for unintentional disobedience, or for any damage done unintentionally. In these last cases content yourself with making the animal understand wherein he is wrong, without too much severity. Well doing should always be rewarded with a caress. In habitual intercourse, be affectionate if you will, but first be reasonable. Do not be lavish of caresses; make them less frequent; but let your rule be gentle, peaceable and just.

Violence and blows are bad means of education for animals as well as men. Force makes itself obeyed, but only on condition of continual action; a sad condition! It sometimes happens that despair revolts against even force; we often see this in the case of the ass, sometimes in that of the horse. Besides, in making yourself obeyed by outer force you drive from the animal all spontaneous action, his grace, his amiability, his order to obey you, without counting that, in using this means, you reserve for yourself an extreme resource for extreme cruelty. Look at the facts. Your poor asses are unmercifully beaten, and are stubborn. Your cruel teamsters overwhelm their horses with blows, and oftentimes can scarcely govern them; the Arabs caress theirs, talk to them, live with them, and do with them, whatever they wish. For my part, in my relations with animals, I always make it an amusing study to obtain their obedience with the least possible expense.—Bulletin De Paris.

**A Good Pig-Pen.**

A Michigan correspondent of the Rural Home thus tells how he built his pig-pen: The main building is 16 by 20, two storeys high, with a cellar 7 feet deep underneath. The first storey is 7 feet in the clear, the upper one 6 feet to the plates. The upper storey is designed for holding corn and other feed; the lower for cooking, mixing, feeding, and also storing. The pens are on two sides of this building, and on one end. The other end has a wide door for entrance, and also large windows for light. The pens have lean-to roofs, and are seven feet high in front and four in the rear. There are two on each side and two on the end, six in all. The floor of the cellar is cemented on gravel, and that of the pens is plank laid in mortar on gravel foundation. Under the sills of the pens there is a wall going two and one-half feet into the ground and laid in mortar. This is to prevent the rats working under. The sides of the pens are plank, and the roofs shingled. There are swing partitions over the troughs, so the pigs can be shut away when putting in their feed. I intend to use cellars for storing potatoes and roots, for winter and spring use, to cook with meal. There is a drive or tube, well going down through the cellar.—Prairie Farmer.

**Better Stock, Well Fed.**

Mr. Willard estimates the annual average produce—in butter—of the dairy cows of America to be one hundred pounds. This at thirty cents per pound, a price higher than the average for the year through the State, would bring an income of \$30. To keep the cow a year will require pasturage, \$6, six bushels meal, and two and a half tons hay. This will return \$18 for the hay. Now increase the butter product to three hundred pounds by the selection of a good cow and by good feed and care, and notwithstanding the cost of keeping is somewhat increased, very much more will be received for the hay fed out. At the same time increase the price to fifty cents per pound, the price now received for the product of some dairies in the State, by strict attention to quality, and the complaint of small receipts for the hay fed out will no longer be heard. The same intelligent course will produce similar results in all branches of stock husbandry, though not in precisely the same ratio. Will not farmers study this lesson?—Maine Farmer.

**How to Choose a Good Cow.**—A writer in N. W. Farmer says:—The crumpled horn is a good indication; a full eye another. Her head should be small and short. Avoid the Roman nose; this indicates thin milk, and but little of it. See that she is dished in the face—sunk between the eyes. Notice that she is what stock men call a good handler—skin soft and loose, like the skin on a dog. Deep from the loin to the udder, and a very slim tail. A cow with these marks never fails to be a good milker.



## The Dairy.

EDITOR—L. B. ARNOLD, OF ROCHESTER, N. Y., SECRETARY OF THE AMERICAN DAIRYMEN'S ASSOCIATION.

### The Butter-Making Interest.

The butter makers of Chautauque county, in the State of New York, are doing a work that deserves the earnest attention and commendation of farmers everywhere. They have formed themselves into a permanent association and hold regular monthly meetings for the discussion of subjects that relate to their specialty. At these meetings the views and experiences of members are brought out, and their successes and failures are made known for imitation or avoidance by others. Butter-making is a difficult art to bring to perfection. A great variety of circumstances combine to affect the quality of butter, and a great deal of study and observation and experience are necessary to develop the best results. No man, working by himself, makes much progress in anything. Those who avail themselves of the experience and wisdom of others are the men who lead in everything. There is no class of producers that need the benefit of each other's experience and knowledge more than butter dairymen. Butter-making will never progress so as to keep up with the advance in other industries until more extended intercourse among the producers is established. Working alone, one has little opportunity of deciding whether his system of operating is the best, or the article he produces is of the highest quality. He will not decide this till he has made comparison with others in the same business. Having no other standard than his own by which to measure his excellence, he gets no clear idea of how his products really stand in relation to others. His own being the best he is acquainted with, he naturally becomes inflated with the conceit that he is making a first-class article, when, perhaps, in fact, it is only fifth-rate. A meeting, once a month, of the butter makers of a neighborhood at which the system of manufacturing, and the quality of the article produced, underwent thorough examination, would correct this ill-founded fancy and stimulate improvement.

Cheese dairymen are pushing ahead and making rapid progress by organization and discussion, and are leaving butter dairymen far in the rear. Though cheese-making in Canada is a comparatively young interest, it is a long way in advance of butter-making, so far as quality is concerned. For the year ending June 30th, 1871, the butter exported from the Dominion was 15,439,266 lbs., and brought \$3,067,229, averaging over nineteen cents per pound. The cheese export of the same year amounted to 8,271,429 lbs., and sold for \$1,109,906, averaging over thirteen cents per pound. Only six cents difference between a pound of butter and a pound of cheese. This is quite too near together. If the butter had been manufactured and cared for, with as much skill as the cheese, it would have been worth thirty cents per pound as readily as the cheese was thirteen cents, and would have added more than a million and a half of dollars to the net profits of the butter producers of that year. This is too much for the farmers to lose; and to think of losing it year after year is not a very pleasant reflection. This loss can be saved. This low price of butter can be elevated; for it is due to carelessness and want of skill, and nothing else. The soil and climate of Canada are as favorable for butter-making as any part of the continent; and the dairy stock is as good as in any other country. The butter which sells for a dollar a pound in Boston and Philadelphia is made upon farms no better than can be selected almost anywhere among the leany lands in the Provinces of Ontario and Quebec.

What is wanted in organization and investigation

to bring out the better practices and lay bare defective ones. A half dozen butter factories would do more toward developing the butter interest than all the isolated dairying in the country; and the organization of township, county and Provincial associations at which regular periodical discussions were carried on would do more still. Is there not enterprise and spirit enough in some of the young men of the country who are engaged in the production of butter, to lead off in this matter and set the ball in motion? Think of it, every reader of the FARMER? Think of it, you whose youthful blood is stirred with life and energy, and see if you cannot get up an organization to advance your own interests and those of the country. If you cannot begin on a large scale, begin on a small one; but start as strong as you can. Two men meeting alternately at each other's dwellings once in two or three weeks, and in a conversational but regular way discussing such questions as occur to them, will make more progress than a whole community working singly. We have seen this proved. The handful of men comprising the Western New York Butter-Makers Association are doing more for the butter interest than all the private butter-makers in the State of New York. We give below the proceedings of their last two discussions. They are interesting, as showing the tenor of discussion, what returns they are getting from their cows, their opinions and practices in regard to feeding sour milk to cows—a question which is attracting a good deal of attention,—origin of flecks in cream, &c., points upon all of which more light will be thrown by future discussion and experiments.

### Hay Cheese.

The prospects of the cheese trade for the coming season are opening favorably. The large markets and the country, on this side of the Atlantic, are well cleaned out, and in England the supply is small and the demand brisk. The early make is likely to be needed as soon as fit for sale, and to be taken at remunerative prices if properly made and handled. Liberal prices should not, however, make parties in too much haste to push hay cheese forward while green. It is not policy to hold it any longer than to have it well cured, because it would be likely to bring it into unfavorable competition with a better article. But while it is had policy to hold it too long, it is a worse one to send it off too soon. If, to the scanty flavor of hay cheese, be added the tough curdy texture of unripe cheese, it makes a product that is not very attractive. It casts an injurious reflection on the producer, and upon the whole cheese interest. It tends to clog the market and diminish consumption, and in the end is detrimental to the individual as well as to the common cause, which every one concerned; in should feel solicitous to build up. There has usually been far too much haste in disposing of hay cheese when prices have been high, sending it away while it was yet green insipid curd.

If dairymen feel in a hurry for returns, and are anxious to avail themselves of the early prices, their best course is to hurry the curing of their cheese. This they can do safely, and in doing so will be very likely to avoid a common error.

The curing of early cheese in factories is frequently defective, being too slow and the heat uneven; but it is much more defective in farm dairies. The difference in the nature of hay curd and grass curd is not noticed, and hence the requisite difference in curing is not made. The casein, or cheesy matter derived from the milk of cows fed on full grown or late cut hay, or other well matured fodder, is harder and tougher than that from the milk of cows fed on tender grass, and it requires more curing to break it down and make it salty and rich. It takes a longer time to cure, and it requires a higher temperature to make it cure with sufficient rapidity. Curd made

from grass will cure as fast at 65 degrees as that from hay will at 75. If early cut hay or roots form part of the food of the cows, it will have a tendency to soften the cheesy matter and make it easy to cure. But ordinarily 75 to 80 degrees is about the right temperature for hay cheese to ripen with the best results. It is better to hurry it up as quickly as is compatible with safety. It should not only be kept as warm as it will admit of, but the heat should be unintermitting night and day. To keep spring cheese hot during the day and cold during the night is to thwart the curing and make it grow sour and bitter, doing injury to the flavor that no after-treatment can ever overcome. It is always detrimental to the quality of cheese to be subjected while curing, to wide variations in temperature, but to spring cheese it is all but fatal. The ripening process may be advanced by a little skill in the manufacture. It is the rennet that is put into the milk, and which is enclosed in the coagulum, that cures the cheese as well as curdles the milk, and the more rennet there is carried into the curd, the faster will the curing proceed, unless other circumstances interfere.

Hay cheese will bear more rennet than grass cheese, and if it is free from any bad flavor, as rennet always ought to be, it may be used pretty freely at this season of the year without detriment. But if it has any strong or objectionable odor, an increased quantity might do injury to the flavor of the cheese. As the quantity of rennet is increased, the temperature of manufacturing must be lowered, or the separation of the whey will be too complete and the cheese be made too dry and hard.

Curd ripens very much faster while lying in the warm whey than after it is taken out; and this fact may be taken advantage of when it is desired to adapt the temperature of manufacturing to the rennet used, and by digesting the curd as long as possible in the warm whey, the curing process may be pretty well advanced before it goes to press. An extra hour in the whey will ripen the curd as much as several days in the curing room. It requires a good deal of skill to make and cure hay cheese to the best advantage, and when that skill is used, a good cheese and one that will ripen quickly, and sell well, and prove satisfactory, may be made. But if that skill is not available, and a poor product, one that is sour or butter, or tough, or curdy, is to go into the market, it would be better to suspend cheese-making till grass comes, and make butter through the spring. But do not attempt to make both butter and cheese from the same milk, when cheese, that is only passable, can be made with all the cream worked in.

It is never good policy to send away green cheese. It is sometimes done in the summer, anticipating that it will keep on curing and be all right by the time it reaches the consumer. It never cures, however, as well in the box as in the curing room. But this practice cannot be safely followed with hay cheese, for the moment it leaves the shelves and gets cold, the curing stops and the flavor at once begins to depreciate, growing bitter and sour and otherwise bad flavored. Hay cheese should, therefore, never be allowed to leave the curing room till it is fit to go upon the table.

A GOOD LITTLE DAIRY.—The Rockford (Ill.) Journal says: "During the season of 1871, Mrs. S. C. Wilder, Harlem, made and sold, from three cows, a little over six hundred pounds of butter, besides having sufficient milk and butter to supply a family of three persons all the time, and live during the busy seasons of seeding, haying and harvest. The calves were raised until they were six weeks old, when they were weaned and disposed of. Mrs. Wilder made from the same cows, during 1870, more than six hundred pounds of butter, which was marketed in this city."

### Feeding Sour Milk.

At a recent meeting of the Western New York Butter Makers' Association held at Fredonia, an animated discussion took place on the propriety of feeding sour milk or whey to cows.

Mr. I. A. Drake wrote that his father milked last season twenty-four cows, and fed nearly all the sour milk to the cows, yet he got 31 cents on the average for his butter; being more than any of his neighbors realized.

Samuel Irwin milked fifteen cows, part being heifers, and made 3,015 lbs. butter. He fed sour milk and bran to his cows, getting first-class prices for his butter.

J. J. Humason said that he proposed to try feeding sour milk to his dairy of 150 cows the coming season.

F. Blanchard said that this question was of the greatest importance to dairymen. Those who report feeding sour milk successfully are careful men, feeding it with caution. No doubt if milk is fed to the cows before becoming sour, no injury to the butter will result. And even if sour milk, just turned, is fed, probably no harm would result. It is as difficult to decide just when milk gets too sour to be safely fed, as it is for a temperance man to decide just when cider is fermented too much to be suitable for a beverage.

U. E. Dodge has tried feeding sour milk to his cows, and it injures materially the cream and butter.

S. Aldrich has fed sour milk, as soon as skimmed, to his cows, and no injury to the butter was detected. Feeding whey does injure the butter, even if bran or meal is fed with it.

L. C. Baldwin said that he had fed sour milk, and it made the new milk smell badly.

S. C. Hall said that dairymen should have nothing to do with sour milk. Coolers should be used in the milk-room, so that the milk will not sour before it is skimmed.

W. C. Gifford said that farmers are too apt to jump at conclusions. More experiments on this subject are needed.

Messrs. Kelly, Blodgett, Lazelle and Rolph all alleged that sour milk is better than sowed corn to cows give milk, and that twelve quarts of skimmed milk are of more value than a quart of meal, or than all the sowed corn a cow can eat at one feeding.

Thos. Dye feeds his sour milk to his cows, and made last season 285 lbs. butter to each cow in his dairy of nine cows. Gets first-class prices for his butter.

O. H. Fields said, that dairymen came here to learn how to make the best butter, "gilt-edged," such as sells 10 cents over the highest market quotations. None of those who report feeding sour milk had obtained gilt-edged prices for their butter.

Mr. Blodgett stated that one-half the dairymen in the town of Stockton fed sour milk to their cows, and the New York dealers say their butter is fine. They sell at the top of the market.

Mr. Humason and others agreed in the fact that the feeding of sour milk increases the yield in quantity, but are not certain about the quality.

The Association adjourned after appointing a committee to enquire into the whole subject.

The Western New York butter makers held their twelfth monthly meeting at Sinclairville, N. Y., March 15th, Dr. G. S. Harrison in the chair.

Mr. Blodgett opened up the subject of feeding sour milk to the cows, upholding the practice in strong terms. He read letters from noted successful dairymen in Western New York, the tenor of which was to the effect that if sour milk is fed to cows as soon as skimmed, no injury will result to the quality of the butter; that the sour milk of a cow for the whole season is worth about \$10 to feed to the cow, and that if it is worth more than that sum to feed calves or hogs, then it will not pay to feed it to the cows.

One or two dealers from New York, who were present, stated that some dairymen could make good, fine, long-keeping butter when feeding sour milk, while some others could not make good butter even if no sour milk is fed.

Several dairymen gave their experience in feeding sour milk, but all fed meal, or meal and bran mixed, with the milk, and on the whole were not certain whether the increase in yield of butter is due to the sour milk or to the provender. They seem not to have detected much difference in the yield of butter, whether the meal was wet up with sour milk or with warm water. One thing was brought out as a fact, that it will not do to feed whey to the cows at any time. The quality of the butter is sure to be injured if whey is fed. The discussion here closed.—*Buffalo Live Stock Journal.*

### Butter-Making.

From the Scottish Farmer.

It is the scrupulous neatness in washing milk-pails and pans, in the management of the cream, in churning and packing butter, that secures an article that will pass for prime yellow, which always commands a remunerative price. I wish to impress on those butter producers who always complain of low prices, the eminent importance of observing only a few things which enable them to make an article which may be forwarded to any of our fashionable hotels, where every pound will command the highest price.

1. See that every milk-pail, pan, churn, and butter-bowl is cleansed with boiling hot water every time it is used.

2. See that the udders of the cow and the hands of the milkers are as clean as pure water will make them, before an atom of milk is drawn.

3. Provide a neat and clean place for the pans while the cream is rising, where the pure breeze from the green fields may blow into one window over the cream and out at an opposite opening. Good butter can never be made in a filthy apartment, where there is offensive effluvia arising from anything, no matter what.

4. Cream ought to be churned every day; yet, if one can provide a clean corner in a cellar or milk-room, clean and cool, and keep the pail on a clean piece of flagstone, he can make superior butter by churning twice per week, providing the temperature of the cream is maintained from day to day about 60 degrees of Fahrenheit.

5. Always skim the milk soon after the cream has risen. Thousands of barrels of cream are ruined for making yellow butter by not skimming the milk soon after all the cream has risen. The sooner the cream is removed after it has risen, the better the butter will be. Milk which should be skimmed at evening is frequently left till the morning, when the cream will be injured to such an extent that yellow butter cannot be made at all; neither will it make as many pounds as if it had been skimmed at the proper time.

6. Let the churning be done by a person whose hands and clothes are as clean and sweet as a blossom of red clover; and let the churning be continued until the butter has come. It is ruinous to butter to put cream in the churn, as is sometimes done, and churn rapidly for a minute or two every hour of the day, then in the evening all take hold in turn, and keep the cream dashing and splashing until midnight. If the cream is properly managed, butter will always come beautifully in less than half an hour.

7. The butter should be worked and thoroughly salted soon after it is churned. There is but little danger of salting too much. One ounce per pound is not enough for butter that is to be shipped any considerable distance. It is ruinous to the grain of butter to throw it into a dish pan and knead it with the hands. The best instrument for working out the buttermilk is anything that will cut deep gashes in the butter, into which the buttermilk will flow. The next day after churning, the butter should be worked again and packed. A great many persons continue to work and knead their butter to its great injury, after the buttermilk is removed, thinking that all the "crystal tear drops," which are not buttermilk, must be worked out.

8. Thousands of tubs and firkins arrive at the great marts containing what was once prime yellow butter, but which was spoiled by being packed before the tubs had been prepared by being soaked in brine. For the sake of saving a pennyworth of salt for preparing a strong brine in which to soak a firkin two or three days, many a frugal housewife has been obliged to accept half the price of prime butter, simply because the staves were not saturated with brine before the butter was packed.

### Pumpkins for Cows.

From a peck of seed dropped and covered in the gaps of a corn field, a dairy of nine cows has been kept up to summer milking and the quality of the butter is super-excellent, and six heifer calves raised from the above are fat as moles. The cows are fatter, too, than a majority of the cattle slaughtered. These cows have been making about six pounds of butter per week, besides supplying new milk and cream for a gentleman's house with sixteen inmates. The pumpkins are chopped up in the mangers with a spade, morning, noon and night, about half a bushel each time when cut into pieces. They eat while being milked morning and night, and they come to the yard and go into the stable for half an hour at noon. Beets, carrots and some other roots and small ears of corn will follow, so as to keep up the milk during winter.—*Cor. of Country Gentleman.*

### Boiling Milk Cows.

Mr. H. Sedgwick, stated at a farmers' meeting at Lowell, Mass., in September, that farmers in his neighborhood were engaged in producing milk for the New York market. Referring to the short feed of the fall of 1871, he added:—"Our farmers all declare they will not go back to the old way of feeding stock. We cut up our straw and every thing available. Many of us have adopted the plan of steaming the food for our cattle, and we are satisfied, from the experiments we have made, that we save a third of our provender by steaming it. As a sample of what this manner of feeding stock will do, I will relate an instance of a young man, who, a year ago last spring, bought a farm of eighty acres for \$11,000. The farm kept eleven cows, four or five yearlings, and a horse or two. The young man took hold of that farm and immediately put in fourteen acres of sowed corn. He increased the stock to twenty-five cows, and kept them on twelve acres, feeding them on sowed corn, and also cutting his oats green for food. His receipts the first year were over \$3,000. This year he summered on the same farm twenty-seven cows, and he told me that his twenty-seven cows would average him \$160 each from the profit on milk.

### Transporting Butter to Hot Climates.

For many years butter has been sent to Europe in hermetically sealed tin cans. Although the business was commenced originally as an experiment, it has expanded to such a degree that, during the last two years, it has occupied several of the largest butter dealers. The object of packing the butter in this manner is to protect it against the action of air and heat, and this is so completely attained that butter has been sent from Copenhagen to China and back again, without the slightest detriment to its edible qualities. The principal places of demand are China, Brazil, Java, Spain and other countries, generally through London or Liverpool-houses. The packages vary in size up to twenty-eight pounds, although those of four pounds are generally preferred. The cans are lined inside with wood saturated with salt pickle, and, when filled, are soldered up. This treatment is thought to exert a very important influence in the preservation of the butter.—*N. Y. Tribune.*

### Devonshire or Clotted Cream.

That noted west of England luxury known by the above name is prepared as follows; From six to eight quarts of milk are strained into a thick earthenware pan or crock, which, when new, is prepared for use by being stood in clear cold water for several days, and then scalded three or four times with bran in them for 24 hours. The milk being strained into the pan, it is stood in a cool room from nine to fourteen hours, according to the temperature. It is then carefully moved to the top of the stove or range, or placed over a bright fire (not too near it) and slowly heated, so that at the end of a half hour the cream will have shrunk away from the sides of the pan and gathered into large wrinkles, the milk at the sides of the pan commencing to simmer. The pan is then carefully returned to the cool-room and left about ten hours when the cream is skimmed off. This cream is very delicious to use on fruit and preserves, and is esteemed as a great luxury, selling for about the price per pound of the best butter.—*Es.*

VALUE OF WHEY FOR FEEDING.—H. C. Drake states that with the whey from the milk of 56 cows he fattened 13 heavy hogs and kept several smaller ones. He also states that in 12 years, keeping from 30 to 57 cows, he had lost but two from death or accident.

THE GOOD COWS AND THE POOR ONES.—Many persons think that a cow is a cow any way. We will suppose that there are two cows for sale: the one is an ordinary cow and is offered for \$40, and the other, an extra cow, is offered for \$75, both of the same age, and the first one will make on an average 125 pounds butter in one year, and at the price of 30 cents per pound would amount to the sum of \$37.50, and the other cow will make 250 pounds in the same time, which at 30 cents per pound would be \$75, double the amount of the first. Now suppose it costs \$30 a year to keep a cow (which I think is a fair estimate,) it will leave only \$7.50 for making and taking care of of the butter, etc., of the first named cow, whereas, you will have \$45 left of the income of the last named cow after deducting keeping, leaving a balance in favor of the good cow of \$37.50.—*G. F. Small.*

# Poultry Yard.

## Designs for Chicken Coops.

Continuing our remarks on this subject, and acknowledging our indebtedness to the journal already mentioned, we may say there are very great objections to a floorless coop in many cases, though where there are no rats or other vermin to make trouble, a coop with no bottom, and moved daily upon a fresh spot of ground undoubtedly secures the most perfect cleanliness with the least trouble.

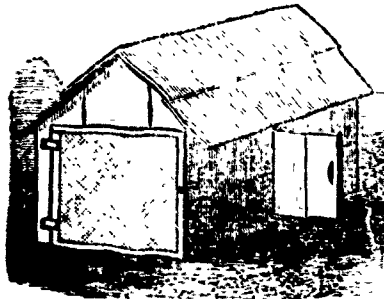


FIG. 8.

Figure 8, shows a design for a coop with a floor for those keepers of poultry who prefer one. It must be understood that whenever a floor is used, it must be often scraped, or it will become untidy and unwholesome. To prevent the hen being frightened while the floor is being cleaned, there is a tight partition separating the coop into two equal parts a doorway permitting the hen to pass, this doorway may be closed by a slide shown in the figure. A large door in each end of the coop permits the room to be cleaned separately, the hen being meanwhile kept quiet in the other part. The chicken during such operations will always get out of the way fast enough, but without some provision against it, the hen unless very tame is apt to get into a panic. The doors in each end may be made of wire grating or slat work, loose boards being so placed against them as to shut out rats and other depredators at night. Small openings not shown in the illustration, permit the chickens to pass in and out in the day time.

But of all the shapes and patterns the triangular coop is the easiest made, and with the least lumber.

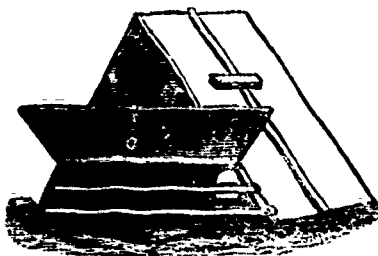


FIG. 9.

Figure 9, gives the front view of another kind of triangular coop. It should be of half inch stuff so that it may be light and moved readily, a piece of wood being fastened to the roof as in the figure, on each side for a handle. If it were not necessary to move the coop often, inch boards would do, but the ease and convenience of the plan, depend much on the use of half-inch boards. There is a cheap sort of half-inch lumber, used for making small packing boxes, that is just the thing. The door *a* opens upwards, slats confining the hens. A pane of glass in one roof is not shown in figure 9, but appears in figures 12 and 13. The glass gives light when the chickens are confined during rainy days, and early in the season, it serves as a hot-house arrangement on a small scale, but in warm weather, the glass must be turned to the north. The floor, figure 10, is made by nailing inch

boards *b b* to the cleats *c c*, the planed sides up to the cleats. Let both ends of each cleat project three inches, and the outside edge of each two inches.

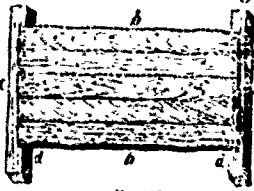


FIG. 10.

floor as in figure 6. Figure 11, shows a section of this form of coop with the movable floor in its place. When the doors are closed at night, leave the large one *a*, ajar a very little for air, the width of the aperture being governed by the weather, and fasten it by means of pegs

stuck in quarter inch holes bored in the cleats at *d d*. The crack left at the door must never exceed one inch, and the chickens will be safe from rats. Once a week, or better

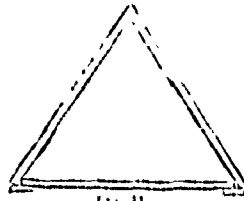


FIG. 11.

still daily, the door *a* being opened to enable the chickens to escape, stand at the rear (the side next the small door) and taking hold of the handles slide the coop slowly, lengthwise of the cleats away from the floor, which may then be scraped with a hoe, the boards being planed as above mentioned, facilitates. Then give a shovel full of earth and reverse the motion so as to replace the coop. The chickens are sure to get out of the way just as soon as you move the coop a few inches, and if the operation is managed rightly, none will be hurt. The only danger is in attempting moving before the chickens are old enough (say two weeks) to run out when their domicile is disturbed. We know of no way of keeping out rats and other marauders, and yet, so effectually by the use of any other chicken coop, which is as cheap and simple as this. During cold days or nights it may be closed in a few seconds, so as to keep out the cold as much as is possible, while allowing sufficient air, and in a hot day arranged as in figure 9, it is cool and comfortable. Suppose it is early spring, and the nights cold. Adjust the house as in figure 12, where a side view shows the roof *A*, and the floor *b b* is imagined in its place, represented by the dotted lines. The door *a* being left only slightly ajar, and the small door at the rear (fig 9), being entirely closed, the crack one-half or three-quarters of an inch wide at *c* (fig 12), and the wire cloth *f* at the peak, afford all

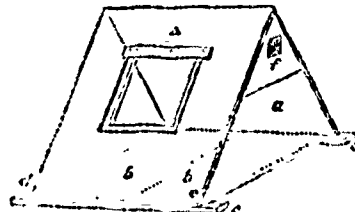


FIG. 12.

the ventilation needed. The coop is so placed that the boards composing the perpendicular part at the rear, are pushed up closely against the floor, leaving no crack at *d*.

Now suppose it is summer, and more air is necessary. Adjust as in fig. 13, where the coop is shoved back, so that the door *a* will strike against the floor *b* and leave as wide an aperture at *c* as possible (one inch is the limit), and not admit rats. By shoving the coop back in this way, another opening is made at the rear of the coop at *d*, of a width equal to the aperture at *c*. Thus a serviceable "ventilator" is made at both sides of the coop, or unmade at will, without any expense in construction. An opening may be made on both sides, or one side, or neither

side, at pleasure. When the hen is removed from the chickens, the coop should not be opened quite as wide at night as before, for a week or so, unless the weather is very warm. But as the chickens grow rapidly, they soon need more air, and it will be found that they will keep warm by huddling closely together upon the floor.

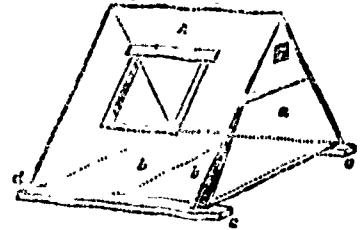


FIG. 13.

When old enough to perch, a box, (fig. 14), is placed upon the movable floor (fig. 10), and the coops (fig. 9, 12 or 13), is placed upon the top of the whole, the box being of such size, that the eaves and sides of the coop overlap sufficiently to shed rain. The box has two perches permanently fastened to it, one of which is seen in figure 14. As the floor is tight at the bot-

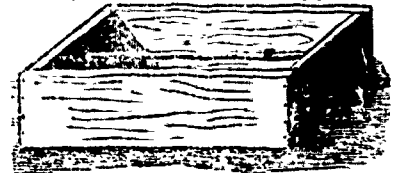


FIG. 14.

tom, and the doors may be left only ajar, rats can neither burrow under nor enter through the openings. Several shovel-fulls of dry earth must be placed under the perches as a purifier. The hinges may be made of old leather to reduce expense. To fit the glass in the roof, build tight at first, then saw a hole one inch smaller on all sides than the pane of glass (a single pane only is used), and place the glass on the outside of the roof boards, keep the pane in place by a few nails, and fasten a strip of tin, so as to overlap the upper edge of the glass to shed rain.

### Preserving Eggs.

It is often worth while to preserve eggs for winter use, and there are several methods of doing so. One of the best, much used in France, is to smear them with olive oil, in which a little bees-wax has been melted. Many persons use butter, but this is apt to turn rancid, which the oil and wax varnish never does. Another method is to pack them in brine, and thus kept they answer for many purposes, but the yolks become too hard and the whites too salt to be palatable boiled. Packed tightly in dry white salt, they do better, and are pretty good, even for boiling, after six or eight months. Another very good plan is to put them in lime-water, one peck of lime to thirty gallons of water; or, still better to bed them closely in layers in lime and water, mixed into a soft paste. By this plan eggs are not much amiss, even for the breakfast-table, after six month's time, still the whites are "set" too much to be pleasant, and the best plan of all is the following:—To four gallons of boiling water add half a peck of new lime, stirring it some little time. When cold, remove any hard lumps by a coarse sieve, add ten ounces of salt and three ounces of cream of tartar, and mix the whole thoroughly. The mixture is then to be let stand to temper for a fortnight before use. The eggs are to be packed as closely as possible, and to be kept closely covered up. Thus treated, if put in when new laid at nine months after they will eat quite as good as though laid only six days, though of course not quite like *new-laid*. These indeed are unapproachable, and an egg laid even twenty-four hours loses that indescribable delicacy of flavor so valued by all who keep their own poultry. Eggs preserved, by whatever method should be treated the same day they are taken from the nest as their quality much depends upon this being attended to.

## PIGEONS.

## Pigeons' Lofts and Matching Pens.

Having selected the kind of birds to be kept, the first consideration with a fancier is to find them suitable accommodation. It seldom occurs, however, that a room is specially built for pigeons, but where there is a choice of locality it is best to select one with a southerly aspect, as it tends to encourage early breeding and is more healthy for the birds than a room exposed to the cold blasts from the north. A dark room is objectionable, it is not as healthy for the birds, especially if they are not suffered to fly out. In any establishment of this kind a good system of ventilation is of the utmost importance. Nine-tenths of the diseases which afflict our high-bred pigeons arise from their being crowded together in dark, dirty, ill-ventilated lofts. Cleanliness, too, is no less an essential, particularly if many birds are kept and not permitted access to the open air. The loft should be cleaned out daily, and under no circumstances should the dung be allowed to accumulate until it becomes offensive to the smell. Fresh gravel, sand or dry earth, should be thickly strewn on the floor every day, and the dung which accumulates in the nest-boxes and around the nest-pans not suffered to collect in any quantity. It is necessary in constructing a loft that provision be made against the ingress of cats, rats and other vermin. Strange cats are most destructive to pigeons. It is said that when a cat has once tasted pigeon, she prefers it to all other food. Rats also are great destroyers of eggs and young birds, and even attack old birds; means should therefore be adopted to prevent their climbing to the nests, which may be accomplished by nailing pieces of tin or zinc round the walls of the loft, so as to prevent their cutting through into it.

Pigeon lofts should, if practicable, be so arranged as to admit of being divided, so as to enable the separation of the birds during winter to be readily accomplished. This is not absolutely necessary with the more common hardy breeds, as in a well sheltered room they will go on breeding successfully nine or ten months out of the twelve; but with the more artificial and delicate high-class varieties, it is useless to attempt to rear the young during the cold months of the year, and therefore it is desirable to separate the sexes after moulting time, or the autumn. This is most readily done by dividing the loft. If the birds are flown, the loft should be so arranged that the cocks and hens can be let out separately, and they may be given their liberty on alternate days. Next in importance to be considered, is the proper arrangement of breeding places or nesting boxes. These are of two kinds—shelves placed against the wall or placed on the floor—if the rooms are crowded shelves may be placed round the walls, and the spaces between them divided by upright divisions, placed about three feet apart, so as to form pens or breeding-places for the different pairs of birds. And if pouters are kept, the distance between the shelves should not be less than eighteen inches; but for the smaller varieties, a foot or fifteen inches will suffice. The ends of each pen should be boarded so that the centre only is open. When lofts are sufficiently spacious, nest-boxes may be placed on the floor and are much more convenient, there is then no danger of the young ones falling out of their nests. When nests are placed on the floor, breeding boxes for the concealment of them are very desirable, they should be made without bottoms, so as to be merely covers to slip over the nests.

We have now to consider the best kind of nests to be used. Round flat saucers are considered the best, and may be made at any brick or tile yard. In size, these pans should vary with that of the different breeds; for small birds as tumblers, seven or eight inches in diameter is quite sufficient; but for pouters, ten inches is not too great. These pans should be made heavy so that they are not likely to be upset by the old birds resting on the edge. In damp or cold weather, or when the nestlings are very young, a handful of saw dust or bran speedily absorbs all

moisture, and the nest becomes dry and wholesome. To keep the eggs warm, a little soft hay, or cut straw, bran or saw dust should be placed within them. Unlike fowls, pigeons are not dusting birds, but, on the contrary, they cleanse themselves by washing; they are fond of lying down in shallow pools of water, expanding their wings, loosening the arrangement of the feathers, and then when the plumage is well nigh saturated, they give a vigorous shake, and the water at once becomes quite white and milky, with the scurf thrown off from the skin of the bird. Shallow pans of water should therefore be placed in their lofts, so that they may indulge in this pleasure when desirable. Pigeons are very thirsty birds, a supply of drinking water, should therefore be always within their reach, especially so when the young are being fed, as after picking up a cropful of corn, the old bird has to take a copious draft of water before it can disgorge it into the throat of the young, and too much stress cannot be laid on the fact that a supply of pure, clear drinking water, is absolutely essential to the health of the birds, an ordinary drinking fountain is the best, if so constructed that the bird cannot step into it, and render the water filthy. Pigeons have a great fondness for salt, a natural instinct which should be indulged. Some fanciers nail a piece of codfish near some convenient perch, so that they can supply themselves whenever desired. Others keep lumps of rock salt in vessels for the same purpose. A very necessary appendage to a loft is a mating or matching up cage. In order to breed birds of any desired properties, it is requisite that the parents should be matched together, according to the judgment of the owner, and for this purpose all that is necessary is to place them in a mating cage for a few days. For this purpose an ordinary pen or cage with an open wire partition separating the two birds will do, the cock is placed on one side, the hen he is desired to pair with, on the other. They should be placed out of sight of the other birds, when the cock will soon make advances towards the hen. The partition may then be withdrawn, and the birds allowed to go together. When the cock is observed calling the hen to nest.



they may be considered as paired, and they then can safely be returned to the loft. The length of time necessary for pairing, depends much on circumstances—pigeons at times, are more anxious to mate than at other times, and when this is the case they will mate sooner. Care should be taken that too many cocks be not allowed in the same loft, as odd cocks are continually persecuting the hens that are mated, and driving them off their eggs, thus causing much fighting and turmoil. A cock should never be allowed to become master of two pens, for he will never rest until he has driven the other pair from their nest, and demolished their eggs or killed their young. In such cases it is better to transfer him to another loft, and in re-mating the birds which is sometimes desirable, if possible, the cock should get the same habitation; if not he will master two pens. Hens when thoroughly mated, will follow their cocks, the same care with them is not necessary. When hens are near laying, the cock manifests great anxiety and will continually drive his mate from place to place, till she goes on her nest. Sometimes he is too violent in his attention, it is best then to keep him penned until after the hen has laid her eggs. At this time hens are observed to sit with their feathers up as if unwell, and protuberance is often seen on the rump, with the tail drooping. A hen usually lays her eggs, skipping one day between the first and the second, after the second egg is laid, incubation commences, and after the seventeenth day the egg will be clipped and hatched. Pigeons require calcareous matter to furnish the materials of the egg shell, and for this purpose a quantity of old mortar rubbish should be placed within easy reach of the birds. If this is not accessible, oyster shells burnt, so as to render them brittle, powdered up and mixed with a little salt is very good. When pigeons are not flown, but kept continually confined or enclosed in aviary, much care must be exercised in the choice of their food. Peas, barley, wheat screenings, and crushed Indian corn are very good. A quantity of green vegetables is also necessary to their well-being.

## An Erroneous Idea.

Many beginners in the business of raising fine fowls start out with the mistaken idea that they must have the so-called "exhibition birds" among pure-breeds, in order to accomplish anything like satisfactory results; and that having secured such birds, they will, on the principle that "like begets like," be able to turn out exhibition fowls in unlimited numbers.

No greater mistake could be made, and the tyro who is so unfortunate as to start out with such expectations is doomed to certain disappointment. In a large number of cases, exhibition birds do not prove successful as breeders, they are not so mated as to produce the best results, and are not such birds probably, as their breeder would have selected for his own use. Of the hundreds of trios of prize birds sold annually at our exhibitions, we don't think ten per cent. of them ever produce chicks as good as themselves; and it is from this cause that many of the complaints arise. Young, hopeful and ambitious beginners purchase these fowls, and with the first season's breeding discover that a large proportion of their produce are very ordinary birds, and immediately condemn the strain of blood as poor; forgetting the fact that the birds they purchased were the choicest trio of a hundred, perhaps, and could not reasonably be expected to produce a large number of young equal to themselves.

The surest and most satisfactory way for a beginner is, to visit some yard where his favorite breed are kept, and see for himself just how they are reared. Then by selecting good, vigorous, healthy birds, above the medium quality, he can by mating them so as to counteract any wrong tendency observable in the stock from which they spring, produce a stock of fowls which with good management will improve from year to year under his hands, and prove a source of constant satisfaction.—*Live Stock Journal.*

## The Diet of Fowls.

The diet of gallinaceous birds, when they are in a wild state, contains a large proportion of highly seasoned or aromatic substances. The buds and berries plucked in the forest are generally spicy, or well flavored with bouquet, or are peppery or pungent. Hence the peculiar game flavor possessed, as every epicure knows, by the flesh of wild animals. Our cultivated grains have a delicious aroma, as proved by newly popped corn, or the fragrance of a loaf fresh from the oven. The flavor of wheat belongs more especially to the portion of the kernel nearest the hull, one reason for the popularity of Graham flour. The flavoring principle in articles of food, such as fruits, nuts, grains or other seeds, consists in a peculiar volatile oil. Now, aroma, bouquet, flavor, or whatever we choose to call it, in food, possesses almost universally a tonic or stimulating property. It gives zest to the appetite and aids digestion. To apply these remarks to the diet of fowls; though grain is aromatic, it is but slightly so, compared with the intensely seasoned forest fare of the partridge, wild turkey, or the parent of our domestic fowl, the wild jungle hen of India. To restore the lost balance, therefore, between the nutritive and stimulating properties of the food of our poultry, a little cayenne pepper, ground mustard or ginger may be added to their meal, dough, milk, or mashed potatoes, with decided benefit to their health and prolificness.

As to cleanliness of henneries, we recommend great care in summer. Carbolic acid dissolved in water should be sprinkled over the wood work of the insides, and a little added to the whitewash, which should be used each season. The nest material should be often changed, that being specially liable to be foul when the birds are confined. Regularity of food, with plenty of pure water and sharp gravel, of course, must not be overlooked.

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