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DE OMNIBUS REBUS

Lincoln Coll, Sorel, July, 1884.

I have given a fair trial, during the past month, to two implements which the proprietors seem anxious to introduce into this district: Noxon's force feed broadcast sower, and Randall's harrow.

The theory of the *force-feed* is satisfactory enough; but in practice, I prefer seeing the delivery of the seed-grain more clearly, as in our English drills, in which cups, placed on the periphery of a disc in continual revolution, take up the grain from the seed-box and distribute it down the pipes in regular streams. You can see at a glance any imperfection in the delivery, and as every change of quantity of seed per acre demands a change of *barrel*, as the sets of discs and cups are called, a mistake can hardly be made. The cups are of all sizes, from those able to contain horse-beans, to the smallest size required for turnip-seed. All complications, I know, are bad in farm-implements; but when simplicity is gained at the expense of accuracy, I own I prefer a little additional trouble.

For instance: I wished to sow 6 lbs. of rape per acre; now, as a pound of good rape-seed is, as nearly as possible, contained in an imperial pint, I set the drill to sow 7 pints — American, or wine, measure. From the position of the small-seed distributor, it was impossible to see how the seed was being delivered, but in going over a measured piece of land, I soon found that at least 10 lbs. per acre was being sown: 70 per cent. more than intended.

I wrote to the manufacturers of the sower for instructions as to the management of the different sowings—clover, Hungarian grass, rape, etc., but I presume my card miscarried, as I have received no answer

The ordinary part of the Noxon sower answers very fairly.

The land being previously well harrowed, the attached cultivator teeth bury the seed a good depth, and a cross-harrowing completes the job. A few acres of buckwheat treated thus show an admirably even plant.

The Randall harrow, as most of my readers know, consists of a number of sharp discs, about 15 inches in diameter, fixed on an axis, or rather on two axes, which admit of being set at different angles. The action is more or less centrifugal, causing a grinding as well as a cutting action. Hard work for two horses when doing its most effective work, but a most useful implement on land afflicted with couch-grass.

I use the Randall harrow in this way: throw back the open furrows, and then return them; plough shallow, narrow furrows, taking care, however, to go below the couch-roots, and cross the work, at once, with the Randall. The furrows will be found cut into small cubes and the grubber will easily smash the whole to pieces, when the sun will destroy the enemy if the harrows are kept going at intervals.

I have cleaned four acres of very foul land this month with the Randall,—it was so foul and bound together that the grubber could not touch it—the implement enabled me to sow rape—to my great delight, because I had been talking rape and sheep for three months, and I did not want the neighbouring farmers to be disappointed in their expectations.

I hear from all sides that the long drought has worked

infinite ill to the crops. On the Sorel sand, the potatoes in many places are *set*, and the grass is all withered away. Some of the hay has been at a stand-still, or worse, for a fortnight —there are very few roots grown, and they don't look likely to yield much. I have kept the horse-hoe going every week —to the astonishment of my neighbours, who can't conceive what it can be for—and, in consequence, my crops are most flourishing.

Cabbages seem to be a failure. I have only 3,000 planted, but, I am happy to say, they are looking as well as I could wish, as, indeed, do the carrots, mangels, and swedes. The oats, fortunately sown on rather damp-bottomed land, are better than I could have hoped for—there is no hay, so to sp ak

My lectures at Lincoln College were attended regularly by fourteen pupils. I cannot speak too highly of the attention with which they were listened to, and I only hope that, in the coming year, I may be fortunate enough to secure such an intelligent and well behaved class. Cicero, I think it is, says that the power of the orator lies in the audience—I am sure it is so with the lecturer; for if I had met with inattention or rudeness, I could have done nothing.

People have begun to borrow my implements, and I can discern an intention to plant root-crops another year, particularly cabbages. I am afraid I shall appear egotistic – I am sure I shall to many,—but I must say it: "We plant our cabbages in the evening, we shade them and water them—they die! You plant yours in broad sunshine; you neitheir shade them nor water them—they all live! Why?"

To this question—one I am continually asked—I can only reply by describing my system of planting:

Sow the seed *thinly* and as early as possible—mine was sown (no glass) on the 24th April, – prepare the land by the tenth of June; draw the drills, dung, split, and roll them as wanted—they may lie unplanted for a week or so without injury. After a shower—and there is always a little rain in June—draw your plants *by the handful*, inserting a spade under them and gently raising them so that each plant may have a few bits of earth sticking to the roots. A few small ones may be wasted in this way, but that is a mere trifle. I treat the plants as tenderly as children, until they are in the ground, but then press the earth round them as hard as possible. I and my planters make the holes with the index finger of the left hand, insert the cabbage with the right hand, and press the earth with both hands. As soon as the plants have taken, pass the horse-hoe between the drills, shallowly at first, but deepening each time until four or five inches of mould—soft as velvet to the tread—are gained, hand-hoeing twice along the drills, and pulling them down, until, what with the depression caused by the hand-hoe, and the elevation caused by the horse-hoe, the cabbages appear to float on a sea of finely pulverised mould. The most important points, however, are the drawing of the plants with adherent mould, and the pressure after setting.

People *will* earth up corn. I found out the mistake as long ago as 1867. The roots meet in the middle of three feet drills, and earthing up confines them to, at most, 18 inches of space instead of the whole three feet. As for the wind scrawling the stems about, I would risk that, rather than confine the range of the roots.

My neighbour, M. Lavallée, tells me he grew last year 600 bushels of potatoes on two acres and a tenth of land—equal to seven and a half tons per acre! A good crop for any place, but, then, the piece had been four consecutive years in potatoes, and two years previously in corn, manured each year However, 300 bushels at 30 cents = $90.00, must pay. I only wish the rest of his farm was cultivated as well, but the idea of a systematic course of cropping never seems to enter his head.

I don't see what reason the vendors of artificial manures have to complain of want of custom. I have applied to one of them for dried blood and for Kainit, andall I can get is bone-superphosphate at $30.00 a ton, two daer by six dollars, considering how cheap bones are.

What little tobacco has been planted looks very weak and backward. Apples, not much grown on these sandy lands, are very poor, but wild fruit, such as strawberries and raspberries, are abundant.

Does any one know of a good, cheap machine for sowing artificial manures broadcast? I have been sowing a mixture of bones and ashes with superphosphate by hand, and after waiting a week for a calm day, it drove me crazy to see the fine pulverised stuff floating over the fence on to my neighbour's land. Haying has just begun, but only round the fences and ditches—next week will see every one at work, though, and I wish the crop was better. There is a good deal of old hay left.

Rye, I see a few acres of, and a wretched show it makes, the dry weather having brought it on too suddenly. The straw is short, and the ears too. Every one is sowing white turnips, as the fly took the few swedes that were put in early. They all sow on drills—a mistake, I think, on this dry land, as the crop would be better on the flat, and at six and twenty inches apart, the horse-hoe (which is not in use much here) could clean the land as well as on drill-work. Swedes and mangels are different, as to produce the greatest possible crop of those roots, the earth should be pulled away from them until they are left as bare as can be.

I see no flax round here! The town of Sorel used to be the entrepôt for linseed, and as I need at least 40 bushels for consumption this autumn and winter, I am rather in a funk about it. I do not intend to grow it myself, as it is too troublesome to manage, unless one has a man who understands how to *ret* the straw; and, after all, I think the profits on its cultivation are dubious.

Average yield of cows in butter in the Sorel district under four pounds a week!

ARTHUR R. JENNER FUST.

FURTHER TESTIMONY ABOUT ENSILAGE.

Experience with a Small Silo.

We observe the following letter from our associate editor, Mr J. J. THOMAS of Union Springs, to E. W Ross & Co., Fulton, N. Y., pubished in the pamphlet on Ensilage just issued by that firm and noticed in our last issue:

I have used ensilage for some years by way of experiment and for a small family. The silo occupies one end of a barn basement, and will hold about thirty tons; it was made at a cost of less than thirty dollars, by merely plastering lined outside with building paper. On the other two sides, the cow stalls are on the same level, and the animals are easily supplied through the plank door. The fresh stalks are drawn to the floor above, cut half an inch long with a two-horse Ross power cutter and a few tons filled in each day. It is better to fill moderately so as to promote some fermentation, which cooks the ensilage and makes it better, than if converted to vinegar at a lower temperature. The silo is weighted as usual with stone on plank, half a ton or more to a square yard. For removing the ensilage, the stones are easily placed on a broad, solid shelf surrounding the silo; this I find much simpler, easier, and better than any other kind of pressure. I do all the work with a two-horse team and the labor of two men. They cut the stalk in the field with sickles, placing them

at one operation on the low wagon and drawing about a ton at a time. One of the small Ross power cutters (*No. 11*), driven by the two horses, which are taken from the wagon, will cut a ton in twenty minutes, but when briskly driven it has been done in less than ten minutes.

I find this mode of preparing fodder to possess several advantages, and on the whole I prefer it to any other. The stalks may be cut, drawn in and chopped in any weather except a pouring rain. The labor of chopping the fresh, succulent stalks is only half as much as cutting fodder; the space they occupy in the silo is several times less than in the common way of storing in barns, and my neighbors are often astonished at the large amount packed solid in so small a space.

The cows prefer the ensilage to dry food, keep in better condition and give rather more milk. An important saving of labor is effected by entirely avoiding placing the stalks in shocks, and then there is no danger of the fodder spoiling in heavy rains.

I have not made a rigid estimate of the cost of ensilage by the ton. On rich soil twenty tons of green fodder may be raised on an acre in the average of seasons.

The past wet summer gave me twenty-eight tons. In very dry summers I have had only fourteen or fifteen tons.

But much depends on the richness of soil, and it is much cheaper to raise heavy crops with plenty of manure. The southern sweet corn, the seed of which I obtain yearly from Burrell & Whitman, Little Falls, N. Y, yields nearly one-half more than our small northern varieties. The cost of the fodder ready to cut ought, therefore, not to be more than one dollar a ton; drawing and filling in would not be greater, probably a little less.

I have found by experiment that cutting dry fodder half and inch or less in length doubles its value for feeding as compared with the common mode of feeding it uncut, and had adopted this mode before employing the silo The latter is a still further improvement.

An important additional advantage is gained by either mode, besides economy in feeding, by the increased value of the manure, which is short, ready to spread at any time, and is free from the long fibre so troublesome in common cornstalk manure.

Feeding Value of Good Ensilage.

Dr H. M. HOWE of Ferrychffe Farm, Bristol, R. I., contributes and interesting letter, from which we make the following extract:

The process of preserving fodder by putting it into a silo and promptly applying heavy weight, is, in fact, accomplishing on a large scale what is done in canning vegetables. It is too late now for any one to pronounce canning a failure, because a certain lot of tomatoes sealed up twenty-four hours after filling, are found spoiled upon subsequent opening.

The construction of the silo may be ever so simple, and its sides may be made of any convenient material, but its walls must be plumb, smooth, and be air and water-tight, and strong enough to withstand the side-thrust which results from the weight of the fodder, and that which is put upon it to produce pressure. In most cases it will be, in the end, cheaper to build the silo walls of stone, or brick, or concrete, cementing smoothly the sides and the bottom, not forgetting to drain the ground when that is necessary. It is a very common mistake to make the silo too large. It is better to build several small ones rather than one as large as all combined. The largest silo should have no greater capacity than can be filled and weighted within two days. Beside the absolute certainty of saving fodder put away with this promptness when sufficiently weighted, there is the added advantage of taking off the daily allowance from the entire upper surface rather than cutting down at one end of a large silo. In the former case, there is no part of the fodder exposed long before it is used.

A silo filled with corn cut immediately upon being brought from the field, and trodden as the filling progresses, which is topped off and weighted with 300 pounds to the square foot, within thirty six hours after the filling has begun, will turn out good, juicy, bright, healthful fodder with absolute certainty. I will not say that good ensilage has not been made, that has had different treatment, but to proceed in this manner is sound theoreticalay, and the results may be confidently relied upon.

It is not remarkable that a food so easily prepared in large quantities which nine cows out of ten will in winter time eat in preference to the best June cut hay that can be put before them, should be given with a free hand. I believe that to the abuse of ensilage more than anything else is due the opposition that some give to this method of feeding. As an exclusive diet it is probably no better for a cow than *sauer-kraut* and beer would be for a man, but fed in small quantities it supplies a useful variety of diet, and provides a succulent food at a season when such food is scarce, and very useful. In this respect it fills very much the same place that roots occupy. Theoretically the chemist may tell us that well-cured hay differs from grass in that its moisture (water) has been evaporated. Were this strictly true from the herdsman's standpoint, it would only be necessary to add moisture to the hay at the time of feeding to make it equivalent to June grass, and yet any pratical man knows this is not the case, and that butter and milk made from hay differ most essentially, both in color and quality, from that made when the cow is fed on grass. The difference between the feeding value of dried corn fodder, and corn preserved in a silo, is probably greater than that known to exist between hay and grass. Practically it is very difficult to cure corn fodder, cut before the grain has ripened, when much of the succulence and nutrition ultimately to go with the ripened grain, is still in the stalk and must be put to the credit of the silo, that it takes the plant at the root and preserves it with certainty for future use. This process of preparing ensilage; however has an improving effect upon the plant. The fodder thus treated, owing to the fermentation which has taken place, has been rendered more digestible, and the feeding value of any nutrient is in proportion to the ease and the rapidity with which it can be appropriated to the needs of the body. A degree of acidity is not incompatible with the good quality and digestibility of the ensilage.

THE POTATO BEETLE IN NEW-ENGLAND.

EDS. COUNTRY GENTLEMAN.—Whatever else may fail, it is quite safe to count on an abundant crop of potato bugs, or Colorado beetles They came out early this season, and are now found in unusually large numbers for this time of the year. Referring to my memorandum book I find that in 1882 they were first seen on my farm on June 2d. In 1883 they were first seen on May 24th. This year I found quite a number creeping about on May 17th, and on June 1st I found they were depositing eggs on the leaves of my early potatoes. On June 7th I picked 263 beetles from 100 hills of early potatoes.

When they attack young potato plants so early and in such numbers, I think hand-picking is the best way of managing them for the following few weeks. If left to themselves, they retard the growth of the young plants, and do them great damage, and if Paris green is used while the plants are so tender, it, too, will injure them. But if the old beetle can be kept in check until the potatoes get a good start, at about the time the young larvæ appear, Paris green can be used to good purpose, and with little or no injury to the crop. I do not like the plan of mixing the Paris green with flour, ashes

or lime, and using it dry. My experience with it in that form has shown it to be more expensive, less effective, and requiring more labor in its application. Besides, I do not like to breathe the air when filled with particles of such dust.

A large brook passes through my farm, and with team and barrels I can soon have plenty of water close to my potato field I then take a pound of Paris green and mix with it three pints of water. Of this mixture I put a large spoonful into a two gallon watering-pot and fill it with water. I can pass across the piece at a brisk walk, sprinkling the tops, and doing good work The advantage of wetting the Paris green in the quart and a half of water is two fold: it saves frequent handling of the dry powder (which the slightest breeze will scatter through the air), and in this wet condition it will mingle with the water when put into the watering-pot so much more readily than will the dry powder, and two-thirds of the time required in stirring will be saved.

Farmers of this locality have not planted more than three-fifths as many potatoes as they did last year. I think there is a prospect of better prices H. L. C. *Rochester, N. H., June* 12.

Dairy Schools.

Mr. H. M. Jenkins, secretary of the Royal Agricultural Society, read a paper on this subject. He said, unfortunately in England at the present time there was no efficient machinery for importing knowledge to those who had in hand the utilisation of milk as food, or in investigating the subject. He proposed to confine himself to the consideration of the best, but at present almost non-existing, means of imparting the known facts of dairying to the young people who would become the dairymen and dairywomen of the future—more especially the latter. Probably the time was coming when the Committee of the Council on Education would realize that it was unwise to train up all the sons of agricultural labourers in the country as if they were intended for employment as civil servants (hear, hear). Dairying was a handicraft, involving a knowledge of an infinity of details, the practice of which required to be varied according to times and seasons. To know these with accuracy and practise them with judgment required a mastery of the reasons why the alterations were made This knowledge could not be acquired except by a combination of practical with theoretical instruction, such as could alone be given at a farm school. Describing dairy schools which he had visited on the Continent, Mr. Jenkins said there were now in the German Empire at least 18 dairy schools, their main characteristics being that only female pupils were received, and the course of instruction included both dairying and the principal branches of housekeeping. In five other schools pupils of both sexes were received, and there were three for young men only. The London market did not recognize German butter by name, but some German butters were among the highest priced. During the past ten years Denmark had led the way in all that concerned butter making In France, dairy schools were being rapidly established, and instruction on the subject was given in elementary schools. Ireland was the only portion of the United Kigdom which possessed dairy schools. There were two very flourishing institutions of that kind, both subsidised by the State, and the consequence was that he was frequently obliged to refer gentlemen who were seeking thoroughly competent dairymaids to the Munster dairy school, close to Cork, or the one at Glasnevin, near Dublin Mr. Jenkins continued—The Munster School comprises two main departments; in one of these the instruction and training of farmers' sons are pursued; and in the other the instruction of the daughters of farmers, and of others, in improved modes of dairy management is the main object. Confining myself at present to the latter department, I may add that the syllabus includes:—I. Elementary instruction in the nature of food, and the feeding of milch cows, and in the nature of milk and its products. II. Practical demonstrations in the most approved modes of handling milk, and of making butter, &c. III. Such other subjects as the Commissioners and committee may determine. For each term of instruction the fee for resident pupils is £3, and for non resident 15s. I have not the complete return of the number of pupils who have been instructed at this school and passed their examinations with credit, but I know that 71 young women did so during the first 18 months' existence of the school. Independently of my own experience, Mr. Carroll, the superintendent of agricultural education in Ireland, states that: "We are constantly receiving letters from noblemen and extensive farmers, asking us to send them a dairymaid who had been instructed in the school, thus opening up to a large class of girls a profitable means of livelihood." Even more recently a Practical Dairy Department has been added to the Albert Model Farms at Glasnevin. Another educational effort in the practical work of dairying was designed and organised in Ireland by that enthusiastic friend of the Irish farmer—the Rev. Canon Bagot. This was a "Travelling Dairy," which, when closed for a journey, looked more like a large furniture van than any other familiar object. When required for work the wheels were taken off and the van was so taken to pieces and re-arranged as to form a covered shed with a boarded floor This ingenuous contrivance was equipped by the Royal Agricultural Society of Ireland: and with its staff of instructors, its implements and appliances, it was sent into the dairy districts of Ireland at a very small expense to the landowners who chose to hire it, until the disturbed state of the country extinguished this, like many another, effort to improve the earning power of the Irish peasantry. Canon Bagot informed me of the effect produced by the teaching given in connection with this travelling dairy in the following words:—"It was gratifying, at the Dairy Show in London in October, 1881, to be able to trace, as on a map, where the travelling dairy had been, by the prizes and commendations out of the 140 entries in the class of Irish fresh butter." In England the first attempt to found a British Dairy School was made, I believe, by Mr. Allender in 1881, but it failed for want of funds In England, then, we have still no dairy school, although Mr. Allender, not dismayed by his previous failure, is again attempting to found one, specially to teach how dairying can be profitably pursued on arable land. It is lamentable to be obliged to state that our Science and Art Department of the Committee of Council on Education artistically plays with agriculture as a science—*which it is not;* and scientifically ignores it as an art—*which it is.* The Agricultural Department of the Privy Council is more logical, for up to the present time it has ignored agricultural education altogether. The most obvious suggestion is that dairy farmers and dairy factories should take working pupils, and in support of this idea I will just point to the success of the dairy schools in Ireland, not only in obtaining pupils, but also in contributing to their welfare in after-life. These schools, however, are subsidised by the State, and it may be that pupils cannot afford to pay a dairy farmer a sufficient sum to compensate him for instruction and supervision.

THE PRODUCTION OF SWEET ENSILAGE

By George Fry, F. L. S.

THE PRINCIPLE.

Soon after a green crop is cut, it begins to undergo a chemical change, whether it is put into a silo or not. This

change is produced by microscopic living organisms called ferment or bacteria. The fermentation will vary according to circumstances; it may be that which is called "haying," or it may be lactic (the ferment of sour milk) or alcoholic (vinous or spirituous), and this may go further and become acetous (the ferment by which vinegar is produced), or it may be putrefactive, besides other fermentations of minor importance which need no mention here.

The germs, which originate these fermentations, are constantly present in the atmosphere, and it is impossible to avoid their being mixed with the green crop in the silo. They require the presence of free oxygen in order to excite them into active vitality, and it is equally impossible to avoid fulfilling this condition, more or less, owing to the air introduced into the silo with the crop. By changing the conditions, however, we can favour one of these fermentations to the (almost complete) exclusion of the others.

In producing sour ensilage means are taken, such as chaffing, ramming, treading, rapid filling, and covering, to exclude both the germs and the air as much as possible, but this exclusion can never be perfect; so that, although by this means fermentation can be diminished, it cannot be prevented. (Under these conditions the lactic fermentation is principally produced.) The fermentation once started proceeds and spreads indefinitely (it does not require free oxygen for its continuance) until stopped (among others) by the following means: — A temperature exceeding about 122 degrees of Fahrenheit.

Now, it so happens that when a hay rick is made and put together slightly damp (what a practical man would call in good order), the haying fermentation raises the temperature above 122 degrees Fahrenheit. Consequently, if we can produce the haying fermentation in the silo, we shall have the advantage, first, of a fermentation which does not produce acidity or other disagreeable results, and secondly, we shall obtain a temperature sufficient to destroy, not only the hay ferment itself, but also any other ferment that may be present to a minor degree.

There is no difficulty in practice in carrying this into effect, and the produce is ensilage, which is virtually free from acidity, a result which cannot otherwise be attained practically. The product possesses, in fact, all the characteristics of hay, except that it is moist instead of being dry.

THE SILO.

The silo may be of any form, provided the covering can closely follow the ensilage as it sinks. It must be air-tight and water-tight — no drain or other outlet for moisture at the bottom. If it be provided with a door for the convenience of emptying, special care must be taken to keep it air-tight. A good plan is either to build it up with masonary or to make double doors, the frame of the outer one being six or eight inches wider and higher than that of the inner one, so that when the intervening space between the two doors is filled up with sand or earth, it may well cover any cracks between the inner frame and the masonry of the silo.

THE CROP.

Sweet ensilage may be made from any crop from which good hay can be made—all the cereals, grasses, and clovers I have not yet tried tares, but have no doubt of success with them. The best time to cut the crop is when in full bloom. The amount of moisture contained in the crop should not exceed about 75 per cent., and may, with advantage, be a good deal less—say 50 per cent. I have found a good practical test of the requisite amount of moisture is to take a wisp of the crop in the hands, and twist or wring it. The amount of moisture should not be so great that any can be so squeezed out. It may be asked, "Supposing the season is wet or the crop is succulent, how can the amount of moisture be reduced?" In a wet season the crop must be allowed to stand longer, so that the stems may become harder and drier; then a little moisture on the outside will not matter. If the crop is succulent and the weather fine, it may be mown and allowed to dry in the sun and air for a few hours—say, cut in the morning and carried in the afternoon. In practice there will be little difficulty in managing this. It will be a good deal easier to get ensilage with 75 per cent. of moisture than hay with something less than 15 per cent. All crops are put in unchaffed.

FILLING THE SILO.

The main point is to start well with the right kind of fermentation. The best way of doing this I have found to be to choose a fine day, and in the morning cut sufficient of the crop to be ensiled to cover about a foot of the bottom of the silo. (When the crop to be ensiled is trifolium, tares or similar dense fodder, it is well, if convenient, to begin the silo with one or two cartloads of grass.) Allow this to dry in the sun and air until the peculiar sweet smell of hay is distinctly perceptible; this may be the same evening, or not until the next day. Then cart this and spread it lightly on the bottom of the silo. On this lightly and evenly spread more of the fodder (either dried for a few hours in the sun, or mown and carted at once), until the whole is about three feet deep. The day after, mow and cart direct to the silo sufficient to form a further layer of about three feet. The next day the temperature near the bottom of silo should be tested, and ought to be at least 90 Fahrenheit. If it be so, put in a further layer of three feet; but if not, wait for a day before adding this quantity. The day following an increase of temperature of at least 100° Fahrenheit will be found in the lowest layer—if it reaches 120° Fahrenheit, so much the better.

The fermentation will now be well started, and the speed with which the silo may be filled up will depend very much upon the nature and condition of the crop Some judgment is necessary to avoid too much compression of the lower layers of fodder before they have reached the necessary temperature of 122° Fahrenheit or upwards. In all cases it is preferable to fill the silo too slowly rather than too quickly. It is necessary to bear in mind two points: —

1.—That compression of the lower layers takes place without much superincumbent weight as soon as they attain a temperature of 122° Fahrenheit, or upwards, because the fodder becomes softened by the heat.

2.—Infection of the upper layers comes from below, and the activity of the fermentation is much increased if air be able to permeate the fodder during the commencement of the fermentation. With a bulky crop like green rye or other cereal (specially when at, or approaching, the blooming stage) the germs from below and air from above will easily permeate a layer of seven or eight feet; while with a heavy, close-packing crop, like trifolium, a layer of even two feet will offer considerable resistance to both these influences. A silo fifteen feet deep can safely be filled to the top with green rye in four days; while with trifolium the same operation would take at least double the time.

When the silo has once been filled to the top, fresh fodder to replace the amount of shrinkage may be put in every two or three days as may be found convenient. It is well, however, to avoid the escape of heat and vapour at the surface (when observed) by throwing in a fresh layer of fodder.

Gradually the heat will be found to be greater round the sides than in the centre, owing to the greater compression in the centre. When in this case, the fodder may be trodden round the edges, to promote even settling as far as possible. When the fodder sinks very little in three or four days, it may be well trodden, and the silo filled up with fresh fodder, which may be trodden so as to get as much in as possible, and the silo may then be finally covered and weighted.

At no time there is any danger of the heat rising too high in any part of the silo The bacteria, which are the cause of the heating, begin to be destroyed as soon as the temperature rises above 122° Fahrenheit, consequently the heat acts as its own governor. In no case have I found a higher temperature than 158° degrees Fahrenheit, and I conceive it to be absolutely impossible that in a silo virtually air-tight any damage can arise from over heating. I am far more afraid of *getting too little heat than too much.*

It will often happen that a month has elapsed between the commencement and completion of the filling of a silo; during this time no covering will be necessary, and it is easy to fill up the shrinkage of several silos at odd times to suit the convenience of the other work of the farm. Layers of different crops may be put into the same silo without any division between them.

When it is desired to begin another silo after a first has been partially filled, a simple plan is to throw about a cart-load of warm fermenting fodder from the first silo into the second, then immediately cover this with fodder mown and brought direct from the field, putting on a small quantity,—say, not more than two or three feet deep, according to the nature of the crop, to begin with.

COVERING.

The covers I use are two-inch battens, cut an inch or two shorter than the width of the silo and laid close together on the top of the fodder. No covers are put until the filling of the silo is complete, even if the filling extend over a month The battens may be entirely dispensed with, but then a little sand or earth will get among the top layer of ensilage—a matter of no great consequence.

WEIGHTING.

Very little weighting is necessary; all that is necessary is to exclude the air. It will be easily understood that when green fodder has been exposed for hours and days to a temperature exceeding 122° degrees Fahrenheit, it does not require much compression to form a compact mass. The weighting I prefer is a layer of sand or dry earth about a foot thick thrown on to the covering battens. This acts not only as weight, but as a practically air tight as well a warm covering. It should be looked to now and then, and trodden close to the sides of the silo as the fodder sinks.

TESTING TUBE.

In order to ascertain the temperature of the contents of the silo at various depths, I construct a testing tube as follows:—

On to one end of a piece of ordinary iron gas piping one inch internal diameter I weld a steel point, and on to the other end which is left open) I screw an iron ferrule, to which are welded two short iron arms 6 to 9 inches long. In the pointed end (within a foot of the point) I bore a number of small holes about one-eighth of an inch in diameter. Then I push a small piece of wool down the inside to the pointed end. When I wish to ascertain the temperature at a particular depth, I drive the testing tube that distance into the fodder. After allowing the tube to remain for about ten minutes, I attach a glass thermometer (graduated on the stem from 32° to 212° Fahrenheit) to a string and drop it down the inside of the tube on to the wool at the bottom. In a few minutes I withdraw it quickly and read the temperature. The handles or arms on the top of the tube are a great convenience in withdrawing it, for when driven six feet into compact ensilage it is not easily withdrawn, and will often require a chain and lever. For practical men it seems to me that an iron rod six feet long would answer every purpose. When this rod is withdrawn, if the part which has been in the lower layer is so hot that the hand cannot be borne on it and the rod becomes gradually cooler towards the top, the filling is progressing satisfactorily. If the bottom is very hot, then there is a cool layer, and then, near the top, a warmer layer, the filling has proceeded too rapidly, and it is *well to await a day or two before proceeding to throw in* more fodder.

Anyone reading these suggestions will probably come to the conclusion that the production of sweet ensilage is a difficult and complicated business, but it is not so in practice. The condition and qualities of crops vary so much that it is difficult to give definite instructions; all I can do, is to endeavour to convey to the ensilor the principles which should guide him, and further assist him by any hints which a short practice enables me to give. Anyone attempting to follow my ideas, will be certain of partial if not complete success, and in no case will useless fodder be produced.

It may further aid intending ensilors if I give here the details of the actual filling of my first silo this season with green rye and trifolium incarnatum:—

May	12	put in	3	loads	rye half hayed.
"	13	"	3	"	" dried for 5 or 6 hours.
"	14	"	6	"	" cut and carried at once.
"	15	"	7	"	" silo filled to the top.
"	16	"	7	"	"
"	17	"	6	"	"
"	19	"	5	"	"
"	21	"	2	"	"
"	22	"	1	"	"
"	23	"	2	"	"
"	26	"	1	"	trifolium incarnatum.
"	27	"	1	"	" "
"	28	"	1	"	" "
"	29	"	5	"	" "
"	30	"	1	"	" "
June	2	"	3	"	" "
"	3	"	4	"	" "

The filling is not quite completed.

The size of the silo is 12 feet by 12 feet, by 15 feet deep.

From May 21 until the 29th we were busy on other work, and therefore devoted very little time to the silos.

On the 20th of May we begin filling a second silo, and a third on the 30th of May.

The loads were as much as one horse could comfortably draw from the field on a cart with ladders—say, about one ton each.

I may say in conclusion that I feel confident that in a few years the production of sweet ensilage will not only supersede that of sour ensilage, but also, to a great extent, that of hay, a change which, in our uncertain climate, must relieve the British farmer from a large amount of anxiety and loss.

Mark Lane Express.

Chatham, June 6.

Shelter is food in winter.

From the Rural New-Yorker.

"Prof. Shelton, at the Kansas Agricultural College Farm has been conducting some experiments on feeding pigs, to ascertain the value of warm housing as a saving of feed, as we gather from his report. Ten pigs were selected, five were fed in separate pens in a warm stone basement, and five in separate pens outside, protected on the north side by a high board fence. The pigs were weighed at begining and at the end of each week; the food was shelled corn, which was also carefully weighed. The average temperature was also carefully recorded. The time of experiment was 10 weeks. The five pigs in the warm pens ate 2,878 pounds of corn and gained 604 pounds, consuming 4.76 pounds of corn for one pound of increase. The five pigs outside ate 2,844 pounds of corn and gained 479 pounds, consuming 5.93 pounds of corn for one pound of gain. Had the ratio of gain been the same in those outside as in those outside, they would have only eaten 2,280 pounds of corn in making the 479 pounds of gain, and as this is 564 pounds less than the actual consumption, it shows that that much corn was used up in furnishing heat to supply what was radiated from their bodies, and this was an average of over one bushel for the five pigs each week. But in the four weeks of greatest cold, the difference was much more marked. The pigs in the warm pens ate 1,865 pounds of corn and gained 189 pounds, consuming 5.74 pounds of corn for one of increase; those outside, in the same time, ate 997 pounds and increased 82 pounds, consuming 18.16 pounds of corn for one of increase. It follows that to have made the 82 pounds of gain, if in the warm pens, they would have only required only 470 pounds of corn, so that 527 pounds, or more than half, were used in keeping the pigs warm. At 28 cents per bushel of corn, the gain in the warm pens cost 2 87 cents per pound, and that in the open pens 6.08 cents At 56 cents per bushel, the gain in the warm pens cost 5.74 cents per pound, and that in the cold ones 12 16. This report should go far towards convincing the most skeptical, of the advantage and profit in having good, clean, comfortable quarters for all animals during cold weather. Our own experience fully coroborates the truthfulness of the above figures and at the same time shows as much profit in favor of housing cattle and sheep as well; in fact, one can make no money in trying to winter any sort of stock out-of doors."

Similar results have been obtained at the Ohio State Experimental Station. Such facts are particularly important to farmers in these very cold regions in the province of Quebec, and apply not to pigs only but to all kinds of stock. [Edit.]

Apiary talks—Wintering bees, &c

How to winter bees without loss, is a problem studied over more than any other by bee keepers in the North. Our Southern brethren have no trouble on this account. While many bee-keepers claim to have solved this problem, others again, have had their pet theories knocked sky-high by some untoward season. Why pigs, fowls, and bees die of a disease called cholera, is yet a vexed question.

We can at least prevent our bees dying of starvation, yet they sometimes do, even when there is abundance in the hive, provided that the weather is extremely cold and they are clustered far from it, and it may also be covered with frost. Bees that are destitute of stores, or have not a sufficiency to last until flowers bloom, should be fed immediately, so that honey can be ripened and sealed before freezing weather. The ne-plus-ultra as a wintering food for bees is claimed to be a syrup made of the best granulated sugar, and fed them in time to be sealed. It is claimed that this food alone, being destitute of pollen, and having none of it in the hive, prevents dysentery When bees consume the honey stored above bee-bread, it stimulates breeding, and they gorge themselves to digest it for feeding the brood, until they are ready to burst. If a mild spell of weather occurs and bees can fly out and discharge their faeces, little harm will accrue, but if cold weather continues, the hive will soon be in a deplorable condition, and the death of the colony will ultimately follow.

Syrup made for feeding bees should not be too thick, but of the consistency of newly gathered honey. The sugar may be dissolved with either cold, or boiling water; we prefer the latter, and are careful to have all the grains dissolved. In the early days of our bee-keeping, we fed syrup so thick that it hardened in the cells, preventing even robber, bees from doing anything with it.

A few days since a gentleman called to inquire how to feed a colony of bees in a nail keg. He said "that he had put a box of feed on top, bored a hole, and he could not get them up." We told him to put several spoonfuls of syrup down the hole at night, so as not to attract robbers, and put a little from the hole to the feed and they would soon find it, and continue doing so, and they would come regularly to be fed, like chickens. —*Mr. L. Harrison, in Prairies Farmer.*

JERSEY COWS

Professor Henry E. Alvord gives the record of the herd of Jersey cows at Houghton Farm, U. S. A. The cows were 15 in number, including two fourteen-year-olds and three heifers with first calves. Taking out these, the averages made by the rest were 6,179 lb. 5 oz., or 2,874 quarts of milk per cow per annum, making 398 lb 10 oz. of butter per cow per annum.

The Mark Lane Express.

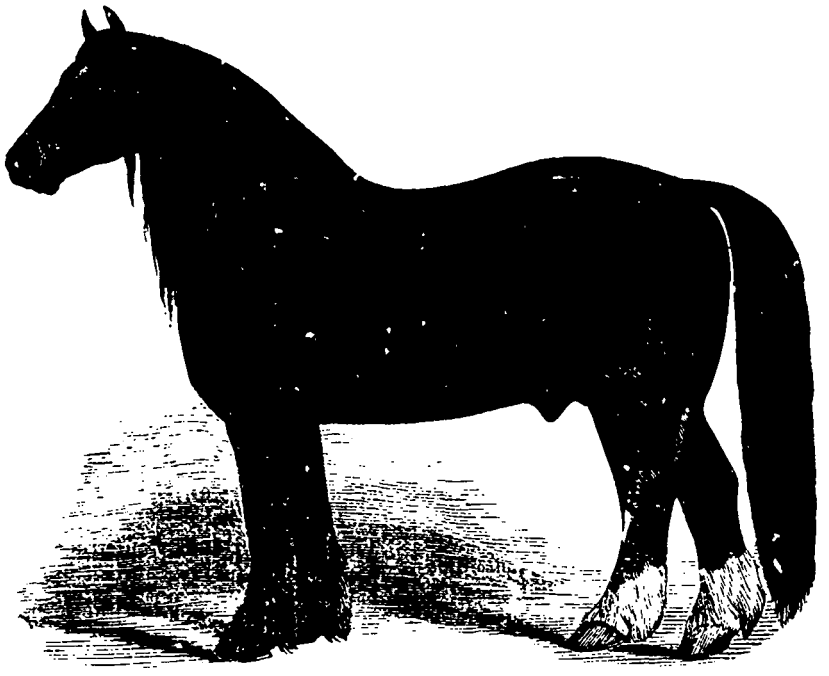
The Dairy Conference at Gloucester, Eng.

The three days' Milk Conference in Gloucester was brought to a close on Saturday.

DAIRY FARMING IN NORMANDY.

At the meeting at Berkeely on Friday Mr GRANVILLE BAKER read a paper entitled "How to get 14d. per gallon for milk." Mr. Baker said:—During the last three years I have been much struck with the increasing popularity of Camembert cheese in London. Lately it has made its appearance in the shops of country towns, and its convenient size as well as its excellent quality, make it probable that it will become in England, what it is in France, an accompaniment of every luncheon or dinner except the very poorest. It seemed to me that it would be a profitable trade for a small farmer, who would have time to attend to it, and who would thus make the most of the milk of even one or two cows. I found a recipe for this cheese in Mr Jenkins' interesting paper on the dairying of the N. W. of France, in the Journal of the Royal Agricultural Society, 1879. As it is not easy to understand the process thoroughly from a recipe, I determined to go to Normandy to see the cheese-making on the spot. By the kindness of some of my friends I obtained introductions to the owners of some dairy farms in Normandy, and of these I visited four, all of which are celebrated for their Camembert cheese. The first that I visited was that of the Marquis de Cussey de Jucoville, at his chateau, about five miles from Isigny. He keeps 30 cows of the Norman Cotentin breed. They are hardy cattle, lemon or mulberry

colour, with large white heads; they give rich milk, but are slow feeders. They lie out night and day all the year. I found that most of the cheese farmers make a great point of this; they thing that milk is injured by the cows lying on straw and manure. The land is valued a £5 per acre; the fields are separated by high banks with thick double rows of elms, and very deep narrow ditches on both sides, which are kept carefully cleaned out The cows are milked three times a day—4.30, 11.30 and 6 0 The evening milk is set and lightly skimmed the next morning: half the skim milk is added to each of the other milkings, having been previously warmed so as to bring the whole to 86 degrees. The rennet (from M David, Rue d'Alençon, Lisieux) is added, a tablespoonful to five gallons. It is left from three to five hours, according to the weather. The dairy maid, by moving her finger over the top of the curd, can tell when it is ready, by finding that it does not stick to her finger. The curd is then ladled out, and put into rings of slightly-perforated tin 4¼ inches across, and the same height. These stand on reed mats, through which the whey runs out on to a table of wood or slate, and is carried by a gutter to a pail. As no pressure is employed, the whey comes out with no cream, and is taken at once to the pigs. The cheeses are turned every 12 hours for two days, and then taken out of the moulds, trimmed and salted, and put on laths in the dairy for a day, after which they are taken to the cheeseroom, here they are kept first on laths in the centre, then on shelves at the side for three to five weeks to dry; and then they are put in the cellar to ripen. The cheeseroom has numerous small windows, fitted with wire gauze and wooden shutters; these are placed at different heights, for the purpose of regulating the draught. The cheeses are turned every day at first; then every other day; more often in damp weather than in dry. At first they are speckled, and then covered with white mould, which gradually turns yellow, and the outside becomes less sticky; then they are taken to the cellar, which has no draught, and hardly any light, and feels rather damp. They continue turning them here till they are ready for sale. In winter they are sold ripe: in summer half ripe, as they mature rapidly in hot weather. I next visited two farms of the Comte de Neuville near Livarôt. At the first, M Hérault's, 40 cows were kept. As a great part of this farm is marshy, he has a cow-house, in which he keeps 24 cows for part of the winter; and he does not seem to think that the cheese suffers from this. He sells a few cheeses in the neighbourhood soon after they are made as "white cheese," but it is never sent to market in this state. The next farm is M Seigneurault's, where there are 70 cows; his land is a little higher up the valley, so his cows lie out always. His farm is a large old half-timber house, very picturesque, his cheeseroom is made out of an old half-timbered shed in the orchard. It was late in March, and there was a burst of hot weather; I found Mad. Seigneurault in consequence of the heat was reducing her make of Camembert, and was making butter and Livarot cheese from the skim milk; this is made in the same way as Camembert, but with less care; wooden moulds are used, and each cheese weighs rather more than 1 lb. It is popular in that neighbourhood and very profitable, but the taste, and still more the smell, is so strong that I do not think it would be liked in England. I next visited M. Paynel's farm, near Mesnil-Mangies station; the beauty of the grand old farmhouse and buildings, all of massive unvarnished oak and white plaster, was a sufficient reward for the expedition, but I saw no particular difference in the way of making the cheese. M. Paynel's grandmother invented this cheese, so that his farm has the greatest reputation for it. His land is worth £3 per acre; he keeps 150 cows, which lie out all the year. The maids do the whole work of the dairy, except churning, which is done by horse power. A man and his wife are kept to attend to every 30 cows. The cheeses weigh about ½lb. each; 3 to 3½ pints are used to each. I believe they are sold wholesale at 6d. each. I saw them in the markets retailed at 8d. and 9d. In London they are sometimes sold as high as a shilling. At sixpence they give a gross profit of 14d. a gallon. M. de Cupey finds that his average gross return is over £40 per cow. The country where most of this cheese is made in general aspect



IMPORTED ENGLISH DRAFT STALLION KING OF THE VALLEY.

resembles that part of our vale that lies near the hills, viz., from Haresfield to Coaley. As the rent varies from £3 to £5 per acre, the land is probably richer than ours; but there are times of the year, such as August and September, when our milk is less in quantity, but richer in quality, when it could vie with the milk of Normandy. This is a very good time of year for making Camembert ch and I think that a good deal of money might be made i farmers would make an effort to secure the 14d per gallon t those two months. Those farmers who keep only a few cows have often a difficulty in making cheese of a saleable size except in the height of the season. A very small quantity of milk will suffice for this sort of cheese. An infusion of Channel Islands cattle might give the necessary richness, if our present dairy cows give too thin milk for the purpose, but I believe if we return to the old Gloucestes breed we shall find that we have got the very cows we want. If we can produce this cheese, we have only France to compete with. America can't send cheese without eight days sea-voyage, which would be fatal to Camembert. I have just heard that a Dorsetshire man is exhibiting English Camembert at the International Health Exhibition. I should have been glad if our own county could have led the way; but any rate I hope we may show that we can follow a good example.

OUR ENGRAVINGS.

English cart horse.
Percheron stallion.
Caywood's black seedling grape.
Caywood's grape trellis.

The Highest Jersey Test On Record.

EDS. COUNTRY GENTLEMAN—In reference to the recent butter test of Mr. Shoemaker's Princess 2d I would like to make an additional statement. For the three weeks preceding the official test, I had made a private test, which I now publish in order to show that Princess has not only surpassed Mary Anne of St. Lambert and Nancy Lee in a month's test, but also in a seven day's test. I also feel myself called upon to swear to a statement which I had made at first without oath, in regard to the consumption of food during the seven day's test by Princess.

It will probably seem strange that Princess did not come up to the same figures during the official test that she did during the preceding weeks, but the cause of her falling off on the fifth day will be sufficiently explained when it is known that she was given some green apples on that day by a visitor, which caused an indigestion, and although it had not much influence on the average yield of milk it had the effect of reducing the amount of butter to one pound less than on the preceding or subsequent days.

STATEMENT

of amount of food consumed by the Jersey cow Princess 2d 8046 during her recent seven days' butter test, beginning on the evening of Feb. 20, and ending at noon of Feb 28:

Cut clover hay	35 lbs,
Mixed bran	48 "
Carrots and beets	35 "
Oatmeal	12 "
Cornmeal	6 "
Oilmeal	6 "

STATEMENT

of amount of unsalted and well-worked butter given by the Jersey cow Princess 2d, 8046, during the three weeks preceding the certified test for seven days;

First week,	ending Feb. 6	26 lbs 6 oz.
Second "	ending Feb. 13	26 " 8 "
Third "	ending Feb. 19	26 " 11 "

I make these declarations conscientiously, and on my oath.
O RICKLEFSEN. *Stevenson, Md.*

State of Maryland, Balt. Co., to wit; I hereby certify that on this 24th day of March, 1884, personally appeared Oscar Ricklefsen, and made oath on the holy Evangelists of Almighty God that the foregoing statements are true to the best of his knowledge and belief.

R. E. TIDNIGS, *Justice of the Peace.*

Fernwood Guernsey Winter Tests.

EDS. COUNTRY GENTLEMEN—You have kindly noticed one week's record of imported Kathleen. At the end of that week her milk was set in open pans for one even day, and when sour, milk and cream were churned together, as is done on the Island of Guernsey. It made, after being worked dry and hard, three pounds and three ounces of unsalted butter, or at the rate of 22 pounds 5 ounces per week.

This process in winter makes more butter than skimmed cream from many cows, their milk being so rich that no system of setting separates it entirely from the cream. The increased quantity, however, in practical work hardly proves a compensation for the loss of the rich sweet skim milk, a very valuable element when from Guernsey cattle, and the butter made in this way is not of the highest quality.

A second week of trial resulted as follows:

TEST OF KATHLEEN, 2ND WEEK, ENDING DEC. 4, 1883.

Time.	*Milk.*	*Butter.*
First two days	83¼ lbs.	5 lbs. 7 oz.
Second two days.	85½	5 9
Third two days	82½	5 7½
Last day	38¾	2 9½
Seven even days	289½	19 lbs. 1 oz.

This butter was worked dry by a lever butter worker, and weighed unsalted.

Her last calf, a bull, was born Oct 13, 1883.

Lady May, No. 531, imported in 1880 with the first Fernwood purchase, calved Nov 9—a heifer. After coming from the box to the place in the milking row, she contracted a slight cold in her bag, which seemed to pass away. Her feed was then gradually increased, and her test commenced by churning the cream only. As will be seen by her record, she increased rapidly in quantity of milk, and more so in richness, until her daily make was three pounds and upward, when the cold again appeared, and it was deemed prudent to reduce her rations. This was done, and she soon recovered, but not until the testing creamer, a Moseley & Stoddard, was in use for Polly of Fernwood.

The following is her record in detail:

TEST OF IMPORTED GUERNSEY COW LADY MAY 531.

Date of Milking.	*Milk.*	*Date of Churning.*	*Butter-worked dry and unsalted.*
Dec 11	31¼ lbs.	Dec. 14	2 lbs. 7½ oz.
12	25¼	15	2 8
13	33½	16	2 8½
14	35½	17	2 8
15	33¼	18	2 5
16	33½	19	3 0
17	33¾	20	3 1
Seven even days.	239 lbs.		18 lbs 6 oz.

Weather very variable, the mercury falling suddenly below zero.

Polly of Fernwood was purchased on the Island in August, and left the green fields on the 13th, for a violent voyage, and quarantine in a dusty yard at Waltham.

Of course an animal of her age, eight years, was not purchased without having great merit, and she has justified the confidence placed in her. She calved Nov. 21st, a heifer, and her milk was set and cream only churned in the test recorded below:

TEST OF POLLY OF FERNWOOD 1565, IMP. SEPT. 1883.

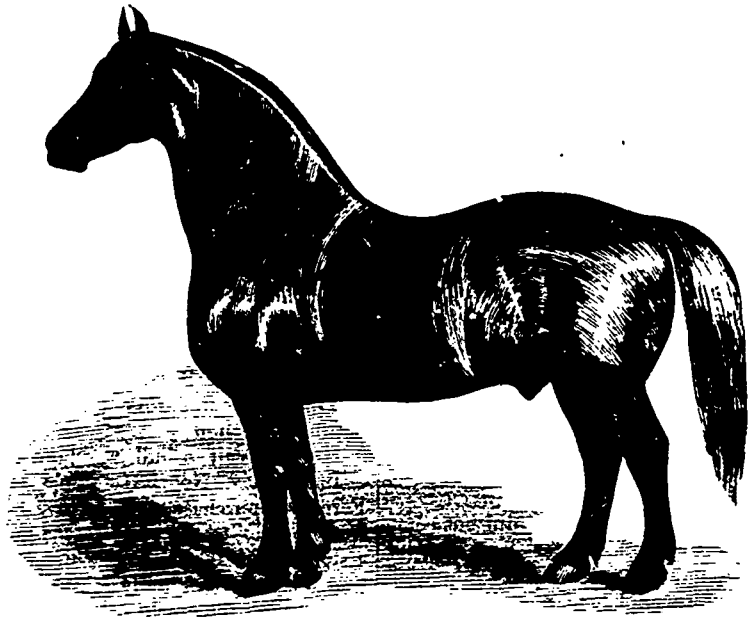
Date of Milking.	*Milk*	*Date of Churning.*	*Butter-worked dry and unsalted.*	
Dec. 18	30 lbs.	Dec. 21	2 lbs.	12 oz.
19	30¼	22	2	8¼
20	31¾	23	3	0
21	32½	24	2	14
22	28¾	26	2	4
23	30¼	27	2	12
24	29½	28	2	15
Seven even days.	213 lbs.		19 lbs	1½

Dr Hoskins on the Wholesale Cash Price of Fertilizer Materials in Boston Market

Our friend and correspondent, Mr A. H. Ward of Bridgewater, Mass. (now agricultural editor of the Boston *Globe*), prints the following price list of fertilizing materials, which will answer many inquiries lately received. They may be had of fertilizer-makers and dealers, wholesale druggists, and and agricultural warehouses. The price "per unit" for fertilizers, of which ammonia is the most valuable, is given below. Thus, ten per cent of ammonia in dried blood, at two dollars per unit, would be twenty dollars per ton:

Sulphate ammonia, 24 to 25 per cent	3 c per lb.
Nitrate Soda, 95 per cent	2.20 c per lb.
Nitrate potash 94 to 96 per cent	5½ c per lb.
Dried blood, 15 to 17 per cent ammonia	$2 25 per unit.
Dried blood, 12 to 14 per cent ammonia	2.00 per unit.
Dried blood, 10 to 12 per cent ammonia	2 00 per unit.
Dried meat, 14 to 15 per cent ammonia	2 00 per unit.
otton-seed meal, 7 to 8 per cent ammonia	24.00 per ton.
Fine ground bone, 3½ to 4½ per cent ammonia, 50 to 55 per cent bone phosphate	25 00 per ton.
South Carolina phosphate, ground, 25 to 28 per cent phosphoric acid	12.00 per ton.
No 2 superphosphate lime, 15 to 16 per cent soluble phosphoric acid	20.00 per ton.
Acid superphosphate lime, 12 to 14 per cent soluble phosphoric acid	16.00 per ton.
Muriate potash, 50 per cent	32.00 per ton.
Sulphate potash, 60 per cent	30.00 per ton.

The No. 2 superphosphate and acid supherphosphate here quoted are made of South Carolina phosphate treated with sulphuric acid, in the manner recommended by Dr Cutting, but having no nitrogen, as Dr Cutting's preparation, in which bone is used, would have. This plain acid superphosphate can be made a complete fertilizer by mixing with it nitrogenous materials (sulphate of ammonia, dried blood, or cotton-seed meal), and potash, in the form of ashes, or muriate or sulphate of potash. The plain superphosphate (with-



PERCHERON STALLION "AMBER."

Weather very variable and trying. Mercury once 18° below zero, and heavy gales.

All the above tests have been conducted with the utmost care and accuracy, new standard scales being used for both milk and butter, and all done under the hand of a member of the family, to guard against errors.

They are not very large records, but are deemed worthy of publication as winter records of three cows in a herd of 23 in milk.

There are several cows on the farm that may fairly be expected to do much better, and they will be duly tested at the proper time and, if deemed desirable by the Guernsey club, will have the attention of a committee.

L. W LEDYARD.

Cazenovia, N. Y.

out nitrogen or potash) can be had, as we are informed, of Benjamin Randall, East Boston, Mass. In order to get a low rate on freight, these goods ought to be bought by the carload, holding say ten tons, which could easily be done by neighbours clubbing together.

Some More Formulæ.

Referring above to the price-list of fertilizer mat , we will now give, for the convenience of our readers, a few formulas for making them up for different crops:

CORN FERTILIZERS.

2,000 lbs No 2 superphosphate	$20 00
300 lbs dried blood, twelve per cent ammonia	3 60
300 lbs sulphate potash	3 00
2,500 lbs will cost	$26 60
Add freight from Boston at $5 per ton (by carload)	6 25
Total	$32 85

POTATO FERTILIZERS.

2,000 lbs fine ground S. C. phosphate	$12 00
500 lbs dried blood, twelve per cent ammonia	6 00
300 lbs sulphate of potash	4 50
2,000 lbs will cost	$22 50
Add freight as above	7 00
Total	$29 50

ONION, WHEAT, OR HOP FERTILIZERS.

2,000 lbs fine ground S. C. phosphate	$12 00
600 lbs dried blood, twelve per cent ammonia	7 20
400 lbs sulphate of potash	4 00
3,000 lbs will cost	$25 20
Add freight as above	7 50
Total	$32 70

FERTILIZER FOR NEW SEEDED GRASS (WITHOUT GRAIN).

2,000 lbs No. 2 superphosphate	$29 50
300 lbs dried blood, twelve per cent ammonia	3 60
300 lbs sulphate of potash	4 50
2,000 lbs will cost	$28 10
Add freight as above	6 50
Total	$34 60

By using the table of prices for fertilizers other formulas can be made up, using other constituents. A considerable saving can be made, where good unleached hardwood ashes can be had, by using them in place of the potash salts at the rate of five pounds of ashes to one pound of the potash salts. On soils that do not require potash, neither need be used. If cotton-seed meal is substituted for dried blood as a source of nitrogen, about double the weight will be required for the same strength.

It will be seen that these composts, when the materials are bought by the carload, can be produced at a cost to the user of not much over $20 per ton, no account being made of the labor in mixing. They will analyze stronger than any commercial fertilizer in the market, and may be relied upon to produce equally good effects when applied to crops. If less than a carload is ordered, the freight will be about $8 per ton, and of course the difference will have to be added to the cost of the fertilizer. In many of our villages there are merchants, who would be willing to order and keep fertilizer materials, if they could rely on sufficient sale for them.

The Waitsfield Fertilizer Experiment.

Mr. Editor:—Your remarks on my fertilizer experiment impel me to a short explanation. The superphosphate was used at the rate of two hundred and fifty pounds per acre, at a cost of $5.50 per acre, and the bone and ashes compost was applied at the same rate of cost per acre on a part of each plot, which of course would be in much larger quantity, and on the other part of the plot was used bulk for bulk as against the superphosphate, with no difference in crop on the two parts of each compost plot. The bone and ashes were applied to about one and one-fourth acres in all. The experiment was made solely to compare the two fertilizers, and care was taken to have the conditions alike in each case, and also to make the application so as not to injure the seed. In fact, this experiment is but one of several which have invariably resulted in the same way, and which seem to me to indicate that upon certain soils the application of potash is at least unnecessary. In proof of this, several of my neighbors have told me that they have never seen any benefit from the application of ashes upon corn or potatoes, while others who, last spring, prepared a fertilizer after Dr. Cutting's formula, at a cost of $15 per ton, and used it in equal quantities against Bradley's XL, report that it produced quite as good results as the latter. These trials were all made upon our river soil. And now, Mr. Editor—I don't wish to trespass farther upon your time or patience, and don't want you to waste your space in printing this—I should like to know why you still continue to use the XL if the other "is just as good and thirty-three per cent cheaper?" In this connection, I will say that the experiment of a vat under a stable of eighteen cows, in which to collect the liquid manure, has been highly successful. During the past year we have pumped from this vat and distributed directly upon the land fifty five loads of about one hundred and twenty gallons each, at small cost of time or strength. That this is a most valuable fertilizer, there can be no doubt That it is now, in most cases, suffered to go to waste, is equally certain—and this notwithstanding that *green sawdust* may be liberally used as an absorbent. That no farmer can afford to allow this waste, and then buy commercial fertilizers to make it up, must be plain to the dullest apprehension. The cost of my vat did not exceed $10, and judging from the crops to which its contents were applied, I believe them to have been of more value to me than a ton of even Bradley's XL. In truth, Mr. Editor, does not the true solution of the fertilizer problem, for the dairy farmer at least, lie in the intelligent use of concentrated food for his stock and the careful saving of the manure, both liquid and solid? Verily I believe it does. (1)

C. E. J.

REMARKS BY AGRICULTURAL EDITOR

—This second letter from C. E. J. puts a quite different face upon the experiment as at first reported. Of course, in trial of a strong potash fertilizer against another with but little potash, upon land where potash does no good, favorable results for the former could not be reasonably looked for. This was just the place for Dr. Cutting's fertilizer, and it is certainly a great boon to such of our readers as are fortunate enough to be farming land that is not in need of potash, to be told that

(1) So do I, when the land is once brought into good condition.
A. R. J. F.

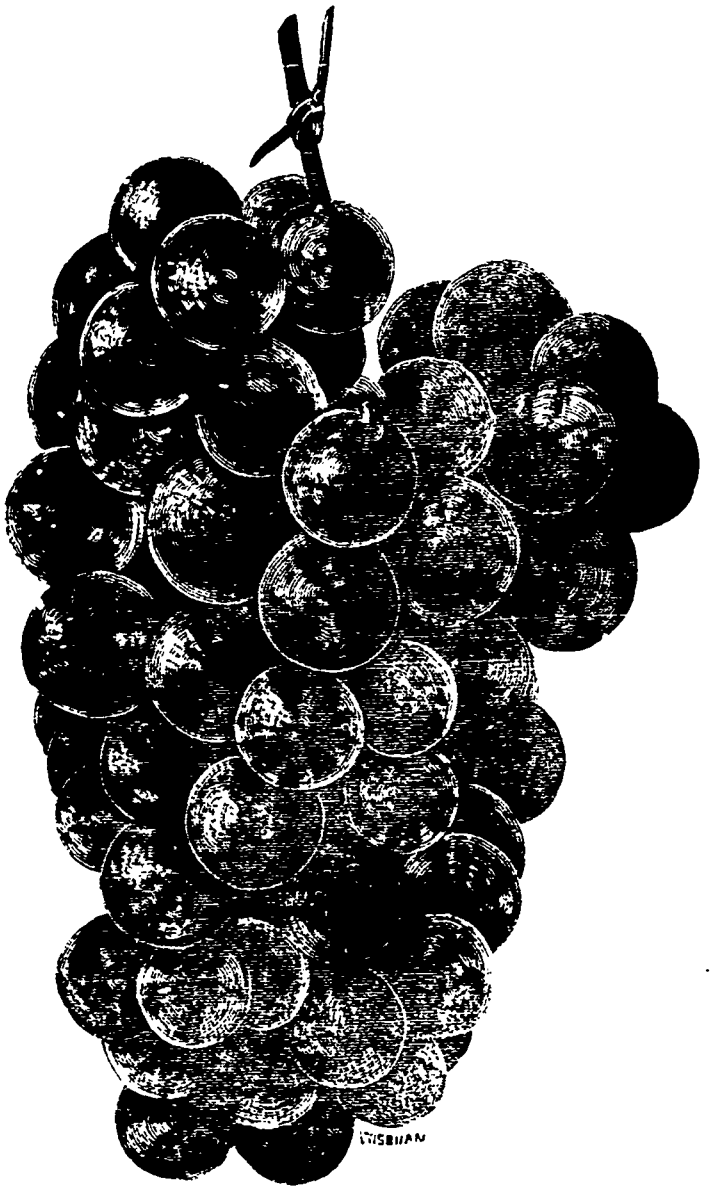
Bradley's XL can be replaced fully by a fertilizer costing only about one-third as much. We wish more of Vermont territory was of this character, but even when ashes are needed they can be applied separately.

C. E. J. wants to know why we still use the XL if our bone and ashes compost is just as good and one third cheaper. The reasons are that often we find ourselves short, near the close of the planting season, and can always get one, two, or three barrels of XL at the village to finish up with. Last year we used a barrel on our onions just to spur them up a little, as a very few days in that crop is often the difference between success and failure. We also used it on our earliest sweet-corn, and at the rate of a pint to the hill for squashes, melons and cucumbers.

In regard to the quantity of the bone and ashes compost used—three barrels to one and one-fourth acres, in combination with a dressing of manure, on a soil where only the bone (one barrel) was of any use—it was too small of course for the experimenter to distinguish in either case what was due to the fertilizer and what was due to the manure. We never use it in that way. We either use all manure or all fertilizer, and then we know what we have been doing, and where to give the credit. If we would have used $25 worth of manure we used the same value of fertilizer, and so in proportion always. We never expect to see the time when we can find any artificial fertilizer which will come cheaper, for the same results, than good stable manure.

We fully agree with C. E. J. in what he says about saving liquid manure. There is no one thing that our farmers can do for pr t that will pay them so well as to follow our correspondent's example and advice in this matter. For the state, "there is millions in it.

DR HOSKINS in *Vermont Watchman.*



CAYWOOD'S BLACK SEEDLING.

A New Idea in Fertilizers.

Our correspondent, Mr Andrew H. Ward, of Boston, in reply to an inquiry from us of the name of a good firm to buy chemical fertilizer materials of, sends us the card of Messrs. Burt & Henshaw, 154 State street, Boston, and says:

"You will be sure of getting a good article of sulphate ammonia of Burt & Henshaw, whose card I enclose. Their price is four cents per pound, and for nitrate soda three cents per pound. In either case the nitrogen will cost twenty cents a pound, which is too much as compared with the wholesale price, but the manufacturers of fertilizers, who buy these articles in large quantities control the retail market and do not intend to let the market go down. It appears that these articles cannot be obtained at a fair difference in price between large and small quantities. I intend by another year to induce some of my friends to go into the business and put the prices at a fair living profit—create a competition. They can build up a good business, and farmers will also be benefited. Sulphate ammonia is not as good a source to obtain nitrogen from as nitrate soda; in this last the alkali acts as well as the nitrogen. One hundred pounds sulphate ammonia will produce four hundred and nineteen pounds hay, and one hundred pounds nitrate soda will produce six hundred and twenty-five pounds hay, and I know of no reason why this proportion will not hold on other crops. If two hundred pounds nitrate soda is mixed with eight hundred pounds fine ground phosphate, the nitric acid of the soda, having a greater affinity for the lime in the phosphate lime than it has for the soda, leaves the soda and combines with the lime, forming nitrate of lime. The soda left free unites with the phosphoric acid and forms phosphate of soda. Nitrogen and phosphoric acid in these combinations are in the most favorable conditions for the growth of plants. Sulphate ammonia can also be mixed with fine ground phosphate of lime and in the proportion of one hundred and fifty pounds sulphate ammonia, and eight hundred and fifty pounds phosphate lime, twenty seven per cent will contain about three per cent ammonia and twenty-three per cent phosphoric acid, which is the average of these constituents in bones. The sulphuric acid unites with the lime, forming sulphate of lime, and the ammonia unites with the phosphoric acid and forms phosphate ammonia. Phosphate of lime treated in either of

these ways will produce better results than ground bones, and the cost is less than pure ground bones, which cannot be obtained in so fine a state of division as the mineral phosphates. If the nitrate of soda or sulphate of ammonia are dissolved in water, and in this form applied to the ground phosphate, the mixture is more intimately made, and the changes of combination take place quicker than in a mechanical mixture. It takes but a short time to get the phosphate dry again, and any lumps formed will break down with the back of the shovel. When the farmers understand these points, they will use these articles in preference to purchasing ground bones, and bones will be sold lower in consequence. Our experiment stations do not do their full duty, but they may wake up some day and give the farmers some information, the most important I believe to be on manures."

In regard to the preference between sulphate ammonia and nitrate of soda as a source of nitrogenous plant food, nitrate of soda, as Mr. Ward says, acts more promptly, and does more good upon an already established crop, than sulphate of ammonia, because the ammonia of the latter has to be changed into nitric acid in the soil before it becomes available, while the latter already exists in the nitrate of soda. Therefore, as an application to mowing, or in spring to winter grain, nitrate of soda will do best. But for application *with the seed*, as in spring-planted crops, where there are no ready-formed roots to take the immediately dissolved nitrate, there is apt to be a considerable waste by leaching before the plants are ready for it, which is not so likely to take place with the sulphate of ammonia. For that reason we prefer the latter for most of our crops.

But the "new idea" to which our heading refers, is that there is a sufficient chemical reaction between the alkaline fertilizers, such as ashes and the potash salts, to make the phosphoric acid in ground phosphate rock to a considerable extent immediately soluble. This statement, if, as we have no reason to doubt, it is sustained by chemical tests, is of very great importance to farmers who are seeking for the best fertilizers in the cheapest form. Mr. Ward says on this subject in the Boston *Weekly Globe*:

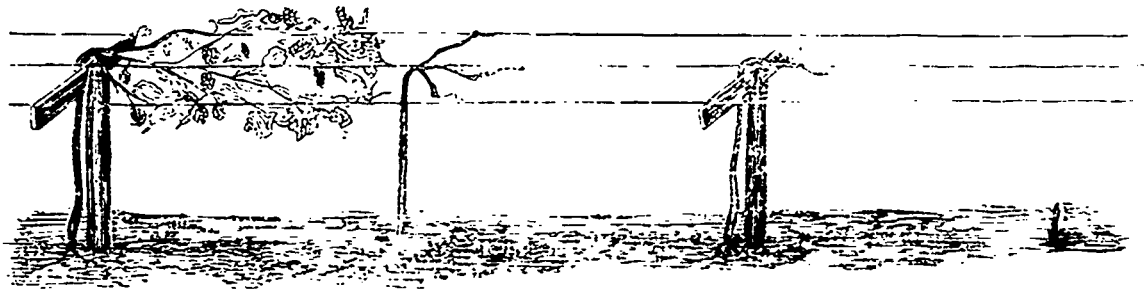
"It is not generally known by farmers that bone phosphate can be decomposed by alkalies as well as by acids. Next to phosphoric acid alkalies are the most necessary to use on our soils, and it would seem the part of wisdom to use alkalies for decomposing phosphates, instead of acids particularly, as it reduces the cost. Plants can take a neutral salt like phosphate of potash without injury, but when an acid salt is used the soluble phosphoric acid formed reverts before it can be utilized by the plant, or it is an injury instead of benefit to the plants; but in the form of phosphate of potash it is immediately available to the plant, which can absorb it with good results. An important question is the process adopted to secure these results, and the relative cost of acid and alkaline phosphates. These will not vary much from the following.

1,000 pounds mineral phosphate, 28 per cent $12 per ton	$6 00
800 pounds sulphuric acid, one cent per pound	8 00
200 pounds water	0 00
2,000 pounds, or one ton, costing	$14 00

containing eleven per cent, or two hundred and twenty pounds soluble phosphoric acid of the *estimated value*. For the purpose of comparison by the experiment stations, at twelve and one-half cents a pound, or $27.50 the ton, for what costs but $14.

1,000 pounds mineral phosphate, 28 per cent, $12 per ton	$6 00
500 pounds salt, one-fourth per cent	1 25
500 pounds lime, one fourth per cent	1 25
2,000 pounds, or one ton, costing	$8 50

containing eleven per cent, or two hundred and twenty pounds soluble phosphoric acid, at twelve and one-half cents, the estimated value of the experiment stations, $27.50 per ton,



Fourth Year. Third Year. Second Year. First Year.

CAYWOOD'S GRAPE TRELLIS.

for what costs $8 50 per ton. The above mixture produces a phosphate of soda equally as good for corn as the following mixture for phosphate of potash:

1,000 pounds mineral phosphate, 28 per cent, $12 per ton	$6 00
500 pounds muriate potash	8 75
500 pounds lime	1 25
2,000 pounds, or one ton, costing	$16 00

containing eleven per cent, or two hundred and twenty pounds soluble phosphoric acid, twelve and one-half cents, or $27 50, and twelve and one-half per cent, or two hundred and fifty pounds actual potash at four and one-half cents, or $11 25, making in all $38 75, at the *estimated value*, by the experiment stations, of what costs $16.00. From the above it is seen that a soluble phosphate can be made from an alkali in the form of phosphate of soda forty per cent cheaper than an acid phosphate, reckoning the price of sulphuric acid used in making the acid phosphate at only one cent per pound, about one-half the price it can be purchased at. Alkaline phosphates are in better form than acid phosphates for food for plants. The plants need alkalies as well as phosphoric acid. The alkalies not only furnish food for plants, but neutralize the acids of the soil, liberating the plant food, putting the soil in its most favorable condition, with proper cultivation, to produce profitable crops. Another advantage

to the farmer of an alkaline phosphate is, that it is so easy to make he can do it himself, all the articles used in its manufacture being well known and easily handled, while in acid phosphate the reverse is the case. There is danger of breakage in transporting the sulphuric acid. It is dangerous to use by those not accustomed to using it."

Poultry for a Lucrative Living.

EDS. COUNTRY GENTLEMAN—Mrs. M. L. L., (p 129, current volume,) wants "some kind reader who thoroughly understands poultry raising," to tell her "whether a lady can make a lucrative living by raising poultry for the city markets." I do not pretend to "thoroughly understand poultry raising" to the extent she has in mind, and I doubt if anybody will make such pretensions, but I can give her some ideas and suggestions that, in the absence of fuller information, may be of essential service.

First, let me kindly suggest that the question, in the form placed before the reader, does not indicate that the writer can have given much observation to the subject in hand, or to business generally in the past. A very little knowledge of human nature would assure anybody that such a question, even if answered affirmatively, might do her no good. Some people make poultry raising lucrative, as well as other pursuits, but she might not. I know two single ladies in a village of about 2,800 inhabitants, who have the largest, finest, most popular and most profitable store there, and began with but a trifle of capital; but it proves very little, except that they have succeeded where a hundred others would have failed. It is the same with men—one succeeds where a hundred or a thousand fail. The lesson that Mrs. M. L. L. has forgotten or ignored is that success in poultry raising or anything else depends more on the individual than on the business or any circumstance connected with it. The kindest and most successful poultry raiser in all creation, nor all of them combined, can so advise her that she will succeed unless she has the mental essentials for success within herself. If she has prudence, ingenuity, patience, some capital, and above all, tact, she may succeed, otherwise not. "Here endeth the first lesson."

The second lesson is to hunt out the best books and publications on poultry raising, and study them. Their opinions will be found, plenty of them, and very often sound ones. Sometimes these books are selfishly inspired, to some extent at least, but so far as I have seen, they invariably agree that "lucrative" success is very rare except to a person peculiarly qualified for it. Connected with the business *as* a business, there are innumerable little details to note, and drawbacks to overcome, which no written or printed rule can surmount, and sometimes not be remotely applicable. *Then* the value of "gumption" is apparent. But they will tell a great deal that is helpful, and often through their very failures, they enunciate useful principles—"glittering generalities" perhaps, but it is the special application of them which is to emphasize the new beginner's capacity for success.

Let me note a few things that may be quite as "lucrative living" from poultry without having a good many, and to handle a good many profitably is far more difficult, even proportionately, than to succeed with a few. The proportionate expense of the investment for 5,000 fowls might not be greater than for 50 perhaps, but it will require far greater tact to manage them profitably even supposing that the owner keeps them in good health, and gets as many eggs and chickens as he can reasonably expect. To buy feed for them is comparatively easy while the bank account is good, but how about important as a blank opinion. There will be no selling of the products from several thousand fowls? No location near a slow going country village, or even to a decently ambitious city, will do. There must be great hotels and restaurants to buy these products regularly and to pay cash promptly; and to receive their patronage by contract, one must have a reputation, and reputations don't come at will.

The chicken breeder must have good help, and an abundance of the sort he needs, and that is very difficult to get. Contracts to deliver must be filled on time and according to the quality demanded, and no excuse as to poor health, bad weather, disappointment about help, &c., is worth a rush if repeated more than once in fifty years. And still, in spite of your possible reputation there will be second class fowls to sell, and sometimes second class eggs, and one must have a second class market for them or heavy losses will follow. Your hens must live only to a certain age for profitable layers, and then they are not "spring chickens" or "broilers" by any means, and coming in your hands in quantity each year, they must be disposed of promptly. You cannot confine yourself to eggs exclusively, nor to flesh growing exclusively, unless you face other risks and difficulties that are equally serious, requiring judgment, tact, knowledge of human nature and of chicken nature that tell immensely on your bank account.

After one gets a reputation as a breeder, a demand for his stock will spring up, perhaps without advertising. It may be profitable, perhaps more so than any other feature—it ought to be at from $7 to $10 a trio—but it complicates matters and calls into requisition a new line of work and talent. It must be conducted on its merits and quite apart from other branches. Here another order of help is required, that which is reliable, alert and practical; and how is it to be had? Not without a large outlay certainly, because it is skilled work. The poor stock must be separated from the good, and the owner's acquaintance with fancy markings must be thorough enough for him to know a $20 rooster from a $3 one, or he soon suffers the pangs of knowing that he has unwittingly put about $17 into some other man's pocket. Eggs of his fancy breeds will be in demand by distant customers, and how to insure them safe transmission against the stupidity and carelessness of expressmen, or how to bear with equanimity the curses of his customers, will be another puzzle to vex his mind.

In all this I have supposed that the breeder had mastered the first problem of success, which is to produce the stock on a large scale. But how many are likely to do that without a long preparatory training? How many will even attempt to give, say to 2,000 fowls, the proportionate care and space that they give to fifty fowls? Not many; and if they do not, the problems connected with selling poultry products on a large scale will not trouble them much. From 50 to 75 fowls to an acre, with separate lots and buildings for each flock, is good advice, but how many novices will heed it? They want a shorter road than that, to a "lucrative living," and are rarely satisfied until they have tried it. The prominent idea in their heads is that if 50 fowls will give a profit of $50 a year under ordinary treatment, then each thousand fowls will give $1,000 profit—but they will not without more than proportionate increase of care and cost, and let the novice not forget this.

As a matter of "opinion" then, given with considerable knowledge of poultry raising, but without any knowledge at all of the qualification of Mrs. M. L. L, my advice is that she *go very slow* in the attempt to make a "lucrative living by raising poultry for the city markets." She will enjoy more peace of mind and make for herself a greener old age,

to invest her capital in New York Central stock, and then to sell newspapers on the street or take in washing as a reliance for such dividends as she needs beyond what the stock brings her.

S. P.

Philadelphia, Pa.

RURAL PRIZE SERIES

PROFITABLE FARMING FOR A POOR MAN.

Waldo F. Brown.

The wonderful resources of France, by which she was able to pay the enormous sums levied upon her by the Germans after the war of a few years since, astonished the world. This money did not come from the millionaires and capitalists exclusively, but from the common people, and largely from the the farmers. I have seen the statement on good authority that the larger part of France is divided into farms of from two or three to 10 acres each and consequently is more thoroughly cultivated and produces more than any country on the globe. England and Ireland, on the other hand, are examples of the evils of great estates, of which we have ample proof in the agricultural distress and the troubles between landlords and tenants. One great good accomplished by a poor man in becomming owner of a few acres of land is that his chances for a manly independence are increased, he is much more likely to become a good citizen and to bring up his children well than when living from hand to mouth and moving every year or oftener. During ten years past I have thought much on this subject, and have had an opportunity of contrasting the condition of the common laborer with that of his fellow who owned a few acres of land, and it was with great pleasure that I noted that the good old RURAL had the interest of this class at heart. So much by way of preamble.

The first question of importance is HOW SHALL A POOR MAN GET A LITTLE LAND. It would require years of economy and pinching for him to save the few hundred dollars necessary to buy even a small place, and by the time this was accomplished—if ever—the strength and enthusiasm of youth would be gone and his chances of success and enjoyment of it greatly lessened. My advice would be to buy the land as soon as two or three hundred dollars were saved to pay on it, and go in debt for the remainder, but in doing this he should be careful not to run too great risk of losing his investment. Our building associations, now fortunately quite, common, offer great advantages to the poor man struggling for a home. In many of them money can be borrowed at eight per cent, and both interest and principal are payable weekly. The principal is paid in installments of 25 cents per week on each share of $200. This allows nearly sixteen years in which to pay up the stock, but the association will receive the full amount at any time and cancel the mortgage which it takes to secure itself. Or, if the borrower wishes to pay both interest and dues a year in advance he can do so, and will be allowed interest on all money so paid in advance. He is also allowed his full share in the profit, and each year reduces his interest.

For example, we will suppose a poor man has $200 saved and finds a home of eight or ten acres, with a house in which he can live for a few years, which can be bought for $600. He pays his $200, and borrows $400 from the building association. All it costs him to become a member is 25 cents initiation fee on each share of stock, and a small fee for examining title and drawing up the mortgage when he borrows the money. His payment, on this the first year, would be ; dues, $26 ; interest, $32. The second year his interest will be reduced $2.08, for he will have no interest on the $26 that were paid off the first year. The second year will not only reduce his interest the same as the former, but he will also get his share of profits of the association on the amount paid in the previous year, which will be nearly the same per cent. as the average interest paid by borrowers. If all the money loaned by the association should be borrowed out at eight per cent., the profits would pay the interest soon after half the sum was paid in ; for the expense of running the association will be a small fraction of one per cent., the secretary being the only salaried officer. It will be seen that at the end of eight years half the stock would be paid in and that the profits on this would soon pay the interest on the other half.

But are these associations safe ? Perfectly, or as nearly so as any organization can be. All the funds are loaned to stockholders as fast as they accumulate, and on first mortgage on real state. The association is controlled by a board of directors elected from the stockholders, and they serve one year without pay. No large amount of money is kept on hand to tempt the treasurer to dishonesty, but it is loaned as fast as it accumulates. This may seem a digression, but the building association offers so easy a method of getting a small place that I feel as though it ought to be explained.

But we will suppose the little farm in possession, whether paid for or not, and now the question comes up, how shall it be managed so as to make the most out of it? First, it should be made, so far as possible, to furnish the family supplies. Three-fourths of the wages of the laboring man are spent at the grocery on Saturday night laying in supplies for the coming week, and now, when in possession of a home, the owner should take pride in seeing how nearly he can come to feeding his family on home-grown products. Perhaps the most important thing, and the one worthy of being mentioned first, is a cow, - she will not only furnish a large part of the family food, but will, if rightly managed, furnish manure enough to dress an acre of wheat so as to insure a heavy yield. This cow should be kept in her stall winter and summer a great part of the 24 hours, and the stall should be so arranged and supplied with absorbents that every particle of the manure, liquid and solid, will be saved. I should expect this cow to be found so profitable that in a year or two another would be bought, or perhaps two, if there were as much as ten acres of land. For the keeping of the cow or cows, every spot of land that can be spared should be kept at work growing a crop. Rye for early spring, oats and clover for later ; beets sown thickly for green summer food and cultivated for Winter ; sweet corn for market, as much as could be sold, the husks and stalks to be fed to the cows, and the same drilled in after the early crops to grow fodder for fall and winter.

For other live stock, there should be pigs, just as many as can be kept on the waste of the garden and house, and probably it will be found profitable to buy some food for them, for with proper care they will be found great manure-makers Keep them in a pen with a tight floor, and let them have a yard of equal size with a tight floor a foot or more below the level of the feeding-floor, and if this is supplied with straw, sods, weeds, potato vines, &c., you will get manure enough from half-a-dozen pigs for another acre before the year is out, and with the arrangement I recommend the pen can be kept from ever becoming offensive. Next you will want to keep chickens, and they will pay in manure as well as eggs and fowls for the table, and can be kept confined to a small lot if you give them such care as you should. They may be let out half an hour before sun-down for exercise and to find some animal food, and they will do little if any damage in the garden, and even if you forget to shut them up at night they can be readily called into their yard in the morning.

Ranking in importance with the cows, comes the family garden, and here everything the family needs should be grown in abundance Look out not only for a summer but a winter supply, and grow largely of those things which can be kept over, or of such as you can sell the surplus. I have saved a bushel of dry Lima Beans for winter from six square rods of land, besides what the family has eaten. I find that my garden potatoes yield usually twice as much as the same amount of land in the field, and then by planting Hubbard Squashes as soon as I dig the first hills of potatoes, I grow a large crop of them. Every foot of the garden should be kept at work during the entire season; study its capabilities and what your market will use, and plant largely of that. If you can sell an acre of green corn it will bring, at 10 cents per dozen, about $100, and furnish food for a cow for several months. Next in importance to the garden will be the wheat patch, and I would recommend that not less than one-fourth of the land be devoted to this crop. I know a man with a lot of only four acres, who has excelled all his neighbors in the yield of wheat per acre for many years. With two or three acres of wheat put in and manured, as the owner of a small place ought to be able to do it, he should have bread stuff for his family and wheat to sell every year. The land under wheat should be sown in clover every year to enrich the soil for corn and potatoes, which should follow it in rotation. (1) A fourth of an acre planted in some one of the improved varieties of sugar-cane will give a barrel, more or less, of excellent sirup and furnish in the seed and blades a large amount of food for cow and poultry. If desirable to work at home as much as possible, often an acre or two of broom-corn can be grown and made into brooms during the Winter, giving employment for the slack season and additional profit.

It is difficult, however, to lay down rules, for every one must be guided by the circumstances by which he is surrounded, his soil, market, &c. One would find the greatest profit in making dairying the main thing, and by soiling might keep half a dozen cows on the products of his ten acres. Another, differently situated, might grow some special crops, such as sweet corn, Lima Beans, or sweet potatoes, to the greatest profit. Another, with a different soil and surroundings, might grow broom-corn almost exclusively, and still another, corn and wheat With all these owners of small farms the question should be "How can I do the most work and get paid for it?" Their farming should be intensive, and everything be done in the most thorough manner. Every acre, yes, every rod, of the land must be made to pay. They must also be ever on the watch for material to keep the soil fertile, and, if they cannot afford to buy manure, they should produce it as suggested above. The average laborer does not earn $300 a year, and must pay a heavy per cent of this for house rent. With no call for latter expense, if he owns his house and little farm and the family supplies are largely produced at home, he will be more independent and happy, and, with good management, will be able to feed and clothe his family much better and to lay by something for a rainy day. The same advice, somewhat modified, I would give to the owners of many poor farms who are growing poor crops and hardly making ends meet from year to year. Intensify your farming. Instead of plowing 30 or 40 acres, plow only 10, or at least only as much as can by means of clover, manure, or both, be be made rich enough to produce heavy crops. Over-cropped land and poorly tended crops are the bane of farming. Put only such an amount of land in grain as you can put in well and tend well, if 20 or 40 acres, well; but if not, try ten or five. Study your business in all its details; there is a way to farm and there are crops which will give a profit on your farm if you will find them out. An old German shop-keeper solemnly affirmed to a customer that he was selling his goods below cost, and when asked how he "made a living at it," answered, "By sure, we sells so many of 'em. There is a very large class of farmers whose business management is much to same as our German friend,—their farming, does not pay, but then they do a vast amount of it.

(1) Unfortunately the land would soon cease to grow clover if sown so often with it. A. R. J. F.

The New York Potato market

DESIRING to get a few facts regarding potatoes in the market at this time, we called upon several of the largest commission dealers here in New York City, from whom we derived the following information, which is presented for what it is worth.—In response to the question. "What potato do you consider the best and most profitable to handle the year round?" the invariable reply was, "the Burbank," because it is the best keeper, doesn't start in the store like the Early Rose, is not false-hearted and is of fine quality. To-day it brings the highest price in the market. The Early Rose according to the opinion of all, is depreciating very much, and in many localities is running into the Late Rose. Dealers consider the Early Rose, when first dug, superior to the Burbank, but it does not hold its superiority. The Early Vermont and Beauty of Hebron are frequently passed off in the market as Early Rose. The Beauty of Hebron, strange to say, does not seem to be growing in favor, the demand for it having fallen off the pass year or so. The price of it is higher than that of some other varieties, but dealers consider it no better. It takes a long time for a new early potato to make its way.

The general opinion concerning the Snowflake is that it is not a good market potato on account of its small size, as it is hard work to get sizable ones Otherwise, it is considered a good sort, bringing as much as any other in the market. The Peerless is used more for shipping purposes, for naval stores and by public houses, on account of its cheapness. The Pride of the Valley and Queen of the Valley seem to be growing in demand and favor, and those seen by us were very fine. The Burbank, Early and late Rose, Beauty of Hebron. Snowflake, Peerless, Early Vermont, Pride of the Valley and Queen of the Valley seem to be about the only potatoes handled in this market.

As to the locality from which the best potatoes come, dealers seem divided in opinion. Some claim Western New York as an incomparable potato-growing country, while others think Maine far ahead. The best Early Roses are now brought from Maine and Nova Scotia. Some think the best Burbanks come from Northern New York. Those from New Jersey are of poorer quality. Very few potatoes come from the West for this market Western potatoes, indeed, are considered inferior to those grown at the East, being coarser, not having so bright and healthy a look, and not cooking as nice and mealy.

It may not be generally known, though we have alluded to it before, that all of the seed for Bermuda potatoes is grown in the Northern part of America. The potatoes grown on the island are almost exclusively Chili Red and Early Rose, mostly the former. The Chili Reds grown there are considered much finer than those grown here, and while a great share of the Bermuda potatoes are of this variety, very few are grown in the United States for this market, as they are of inferior quality. This Winter potatoes have kept pretty well The best sweet potatoes are grown in Jersey and Delaware. Virginia sweets are not nearly as nice-looking, nor do they cook as well, and accordingly they sell at a lower figure.