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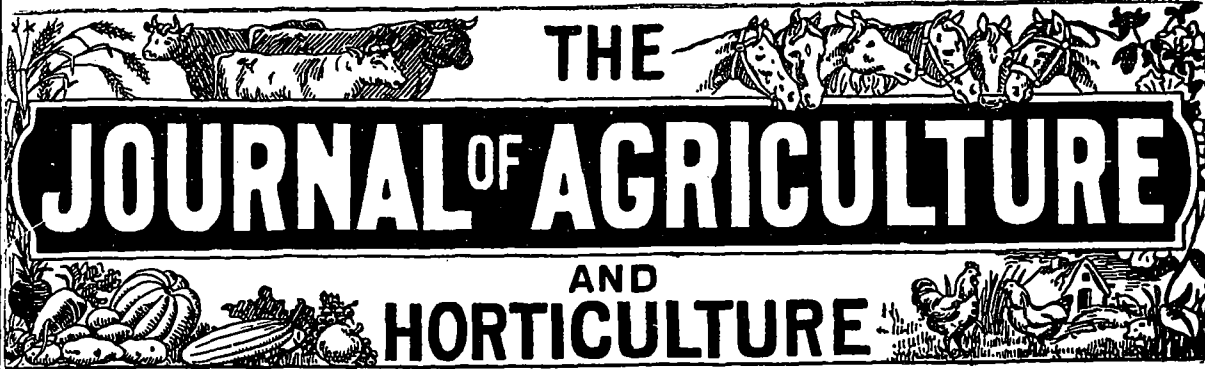
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# THE JOURNAL OF AGRICULTURE AND HORTICULTURE

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## THE Journal of Agriculture and Horticulture

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## THE DEATH OF HER MAJESTY QUEEN VICTORIA.

I remember well the death of William IV, and, though not so well, the death of George IV. The death of these monarchs caused no great depression of feeling among the people.

How different is the present case! No pretended, conventional grief do we read of or see. The people of the late Queen, whether those in her sea-girt Isle, in distant Australia, in the torrid realm of India, or in this our Canadian home, are, in no figure of speech, plunged in heart-felt grief.

To what end should we multiply words? A good woman is gone: whither, no one can doubt; a wise, discreet Queen has left her subjects for ever; she has gone to receive, from the giver of all good gifts, an everlasting crown, the reward of sixty-four years of fair and equal dealing with the people entrusted to her care, and of patient watchfulness over the numerous family, whose virtues, well known to us all, are mainly due to the teaching and the example of VICTORIA THE GOOD.

Arthur R. Jenner-Fust.



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## The Farm.

### NOTES BY THE WAY.

"Complaints about clover".--We have lately met with a great many complaints, in the agricultural papers of the United States, about the failure of the clover-crop. It would seem that, for the last few years, it has been difficult to get what is called there "a stand of clover." Various reasons are assigned for these failures, such as early frosts; too dry summers, etc., and various remedies we proposed; among others, farmers are advised to sow the clover-seed alone, without any "nurse-crop". All this has been going on now for several years; but no cure seems to have been discovered for this lamentable failure of one of the most valuable plants cultivated by the United States' farmers.

Now, as we have often mentioned in this periodical, nothing is more simple than an explanation of the cause of this failure of the plant in question; and when its cause is discovered, the remedy follows as a matter of course.

The modern rotation, followed in the South of England during the earlier part of the nineteenth century, was the "Norfolk" or "four-course," consisting of,

- 1st, a root-crop;
- 2nd, barley, sown-down with clover;
- 3rd, clover mown twice for hay;
- 4th, Wheat.

This rotation was followed--we may say slavishly, for many years, and it was not until about the year 1835, or there about that farmers in the Southern half of England began to find that there was something queer happening to the third limb of the rotation.

Instead of the clover taking well, when first sown, and continuing to thrive without intermission throughout its short life, it certainly took well at first but gradually became weaker and weaker in appearance; here a plant and there another lost root-hold; patches, more or less

in extent, gave out altogether, and in many cases the crop vanished entirely before the winter began.

And now let us listen to the opinion of the late Sir John Lawes, the well-known proprietor in his day of the experiment-farm at Rothamsted in England.

#### *Clover sickness.*

BY SIR J. B. LAWES, LL. D., F. R. S.

EDS. COUNTRY GENTLEMAN--The valuable article on clover sickness by F. P. Root which was published in your paper of Feb. 3d (p. 84) establishes the fact that in the soils of the United States, as in the soils of Europe, clover sickness prevails wherever clover has been grown too long, or been too frequently repeated. The author describes the results just as they occur elsewhere. First, the benefit which the wheat derives from the growth of the clover; then the benefit which the clover derives from plaster, and finally the inability to grow clover, which is followed by bad crops of wheat.

Considering the immense difference in the amount of fertility which is found in different soils, it is not surprising that those who farm in the most favored localities are sceptical in regard to the failure of the clover plant. Having farmed all their lives without having experienced any failure, they see no reason why disease should ever occur. The cause of clover sickness has attracted almost as much attention as the source of the nitrogen in plants, and, as far as I can see, both are likely to form subjects of inquiry for a long time before the final solution of the problem will be arrived at. Although clover sickness has occupied our attention almost from the commencement of our experiments, for a long time we hardly advanced beyond the fact that no combination of manures, natural or artificial, would cause clover to grow upon land which was clover sick. Of late years, we have gathered two or three scraps of knowledge which have enabled us to mount a step or two up the long ladder on the

top of which is the problem.

In the first place, we have grown red clover continuously for 35 years upon an old garden soil without the application of fresh manure. The soil and sub-soil to the depth of 18 inches was exceedingly rich in nitrogen, and it is evident that dung in large quantities had been trenched to this depth into the soil. The top soil has lost an enormous amount of its nitrogen, but it is still very much richer than the soil of the farm. The sub-soil, in fact contains much more nitrogen, even now, than the surface soil of the farm. This large reduction in the fertility of the surface soil is contrary to what takes place when red clover is grown on the farm, although the crops grown are made into hay and carried off the land; and even when the roots of the clover are, as far as possible picked out of the soil, we still find an increase of nitrogen to have taken place.

Although the crops of clover grown on this garden soil are equal to, if not larger than, those grown on the farm, they are very inferior to those grown in the earlier period of the experiment. At first the clover did not require to be re-sown for four or five years, now it is re-sown every alternate year. We have evidence here that, while red clover has been grown for 35 years without the appearance of disease, on the farm it is hardly safe to repeat the crop until from eight to twelve years have elapsed since the previous crop was grown. (1)

We have a field which has been under experiment for nearly 40 years. Part of this field received no manure during the whole of the period. Another part received mineral manures (phosphate of potash), and a third part has been very highly manured with rape cake, salts of ammonia, and minerals. Turnips are grown, or rather an attempt is made to grow them, every fourth year, but the unmanured turnips

grown with mineral manures yield 8 or 9 tons per acre, and the highly manured turnips yield over 20 tons per acre. Upon one half of each experiment all the turnips are carried away, and on the other half they are cut up and plowed in. The wheat, barley, and clover or beans which are grown during the other three years of the four rotation crops, are all carried off.

The soil which has only received mineral manures, and from which the turnips, as well as all the other crops grown, have been removed from the commencement of the experiment in 1848, must be, so far as organic matter and nitrogen are concerned, in a very impoverished condition. Where the turnips were plowed in once in four years, the condition of the land would be a little better, while upon the highly manured land the soil must be full of fertility, both where the turnips are removed and where they are plowed in, and in the latter case the fertility would be much the greater.

In 1874, and again in 1882, we grew crops of red clover over the whole of this land which was under experiment. In both years the crop was very large. Upon the highly-manured plot it amounted to 4 tons of clover hay each year; upon the land receiving minerals it amounted to nearly 3 tons each year, and upon the unmanured land it amounted to rather more than 1 1-4 tons each in four years. Wheat was grown in 1883, turnips in 1884 and barley in 1885. The clover was sown in the spring shortly after the barley. There was a very good plant upon all the plots during the autumn and winter, but in the spring, disease began to show itself on both the highly-manured plots, being rather the worst where the turnips were plowed in. As is usual in these cases, the plant died off, bearing bare patches. Sometimes considerable strips were not attacked, in which case the plants that remained were very strong and vigorous, and the yield of hay in two cuttings amounted to 1 1-2 tons per acre. It is probable that more than one-half of the crop was destroyed.

(1) The East of England farmers have followed this rotation ever since the clover-plant began to fail:

1st time round, clover;  
2nd time, pease or horse-beans;  
3rd time, trefoil; equal to 12 years in the rotation. Ed.  
J. OF AG.

On the two lands which had received mineral manures, and where the turnips and all the other crops grown had been removed since the experiment began, there was no disease whatever. On the portion where the turnips were plowed in there was some slight disease, though the crop appeared the most vigorous of the two; the yield, however, was slightly below the other, as the first yielded 2 tons 2 cwt. of clover hay per acre, and the other 2 tons 4 cwt. per acre. Upon the unmanured portion the plant may be said died of starvation, plantain and coltsfoot having taken its place. The plants that remained were barely high enough to cut with a scythe, and the whole produce, including the weeds, amounted to only half a ton per acre in the two cuttings.

The interest of the question lies now in the two manured plots. For all practical purposes the fertility of the manured land has been so much reduced by the removal of thirty-eight crops, that it has ceased to grow either turnips or clover. If we compare the condition of the land where there was no disease, and where the disease was the worst, we find that where there was no disease, no organic or nitrogenous manure had been applied, and all the vegetable matter grown had been removed; while the mineral manures applied contained more phosphoric acid and potash than what was carried off in the crops.

The land where the disease destroyed a large portion of the crop received, with the mineral manures, every fourth year, 2,000 pounds of rape cake, and 200 pounds of salts of ammonia, the large crop of roots and tops being also plowed in. As compared with the other soil, the soil contains vegetable matter in a different stage of decay, and provides suitable food for a great variety of under ground life. We find that the application of rape cake is followed by an immense increase of wire-worms; it is said among farmers that where the corn crops are attacked by wire-worms an application of rape cake will kill them the fact being that they cease to eat the young corn and feed upon the cake.

The analysis of the soil of these two plots shows that the land which had been highly manured contains far more organic matter and nitrogen than the other plot, while at the same time it contains very much less of these substances than the garden soil. The evidence points to a destruction of the clover plant by living organisms in the soil, a large increase in this life having been encouraged by the liberal supply of organic and nitrogenous matter. This does not however explain—supposing we have taken another leguminous crop, say beans, at the end of the fourth and the eighth year, followed by the red clover in the twelfth year—why the crop would, in all probability, escape the attack of the living agencies, and be free from disease. It is at this point that the difficulty of finding a satisfactory solution is the greatest, and it can only be met by assuming that the clover plant requires, as part of its food, a special organic compound.

It must be understood that on our experimental land, whether 4, 8, or 12 years elapse before the clover is repeated, the same operations are completed every fourth year. Instead of one application of rape cake and ammonia, there will be two or three, two or three crops of roots will be plowed in, and more corn crops will be grown. The only distinction that I know of will be that the earlier applications of manure will have gone through longer periods of decay, and have formed compounds, of which we know little or nothing. These compounds, however, when we arrive at further knowledge upon the subject, may explain much which is obscure at the present time. That such compounds are formed, we have very strong evidence in another field, where we endeavoured to grow beans for a long series of years upon unmanured land. The crop became very small, the growth being only a few inches high. Analyses of the soil showed that it had lost a large amount of organic nitrogen, and it was very poor in nitric acid. The experiment was therefore given up; and the field was sown with barley

and clover. The barley was by no means a fine crop, but the clover was magnificent, and the color of the leaf remarkable for the beauty of its green.

I have selected this experiment out of a number of others where the clover was even more luxuriant, as in all the others manure of some description was used. Here we have the fact of a soil which became poorer in organic matter, nitrogen, phosphates and potash, ceasing to furnish food for one leguminous plant, while it was accumulating food suitable for another plant of the same natural order. The soil of the garden where the clover has been grown for so long without disease, differs in two remarkable respects from the soil of the highly-manured rotation land, where disease occurred when the crop was repeated after an interval of four years. On the garden soil the accumulations from former manures were very large, and there was no fresh organic or nitrogenous manure to feed living bodies. It is quite possible that when organic matter has reached a certain stage of decay it may cease to be a food for much of the larger sorts of organic life in the soil, such as worms, etc.

"Deep vs. Shallow ploughing".—Another long article in the "Country Gentleman" on this subject, and the conclusion the writer arrives at is remarkable for its irrefutable logic. But if we, or any other Englishman, had hinted at such a thing, we should have been told that we knew nothing of the farming of the States, and if the yeomen of that country did only grow 12 or 13 bushels of wheat to the acre, they were better off than the English tenant-farmer with his average of 30 bushels.

The question of deep or shallow work is simple enough; so simple that we are almost ashamed of having to treat it so often. Bring up a lot of raw soil in the spring and sow corn or any cereal in it, and you will probably be punished for your folly. Plough an inch or two deeper than usual in the fall and sow roots or

potatoes, with manure, in the spring, and you will probably be rewarded for your judgment. You dig your garden 9 and 10 inches deep, and you plough your farmland 4 and 5 inches deep! Can you tell us why, what is beneficial in one case is injurious in the other? Mr. J. W. J. replies that "in the spade husbandry of Britain, which has been practised for ages with good results, the land is spaded deeper than it can be ploughed, but great care is taken to keep the surface soil at the surface, and the subsoil under ground, where it belongs." Not so, please; it is only when land is trenched two or three spits deep, that pains are taken to keep the surface soil a-top. In ordinary spading, or preferably forking, 9 or 10 inches deep, the soil is perfectly inverted.

At last, J. W. J. hits the right nail partially on the head by saying what he ought to have said at starting, that "deep turning of the soil is a positive damage to the land unless it is well manured." We should alter this into; "injudicious deep-ploughing is injurious to a grain-crop sown immediately on such work, but decidedly beneficial "to the land" for more reasons than one.

"That moderate crops of grain can be raised by stirring a few inches of the surface soil, is shown by the practice of the farmers of India and Egypt, where all the ploughing is done with a crotched stick of wood, with one of the prongs armed with a piece of iron to run in the ground. With this rude, unsightly implement which does not turn any furrow, they scratch the earth, cross-scratch it and re-scratch it many times until the top soil is mellow enough for a good seed bed. That this system of scratching is about as good as plowing is proved by the yield. The average yield of wheat in India is about 11 2-3 bushels per acre, and the average yield in the United States is but 12.2 bushels." (1) J. W. J.—Sugar Run, Pa.

"Lucerne again".—Hoard Dairyman complains that but little is known about

lucerne-called in the States by its Spanish name "Alfalfa", which means THE clover, emphatically—in the middle west and eastern states, for divers reasons; but that it is highly desirable that its cultivation should be thoroughly understood, as "red-clover has become a very fickle crop, because of the severe winters and because the farmers kill it the first mowing season by letting it form seed before it is cut". And then the writer goes on to explain the way to prevent the clover-plant from failing, and a very easy way it is, too, only the misfortune is that it has nothing to do with the cause of failure: "If we wish to keep up our clover meadows, and prevent our own practice from killing in (sic) we must cut each crop during the season just before the seed forms". In other words, clover must be allowed to stand until the blossoms are all fully out and the leaves are ready to drop off as soon as they are dry, instead of being cut when the blossoms are hardly expanded, the plants in its full vigour, and the leaves adhering firmly to the stalk.

But to return to our original subject, lucerne or alfalfa. Mr. Hoard's says that "in the middle and western states, we know too little about this plant". Very likely: but why? It is not a new discovery: we grew it in England, in all the southern and south-eastern countries, certainly a hundred years ago, and its cultivation is of the very simplest kind, just as simple as the cultivation of clover or any grass-seeds.

Sow it with any spring-grain, barley by preference; at the rate of 20 lbs. to the imperial acre; on any land, except heavy clay, that has a dry subsoil; cover the seed with the chain-harrows, roll as soon as the grain is up, and the thing is done. As for "from 25 to 30 pounds of seed per acre" being necessary, that, begging Mr. Hoard pardon, is not the case. We have grown it ourselves here, and several of our friends have grown it under our superintendence, and the quantity of seed mentioned has always been found amply

sufficient.

It is emphatically a "soiling crop". The blossoms would never be allowed to even partially expand before cutting. Sow broadcast and, after the second season, harrow as hard as you please, till the ground looks like a fallow, for weeds a top, and water in the subsoil, are the only enemies lucerne fears. As for selecting "land with no hard-pan or rock within ten feet of the surface" as Mr. Hoard says, that is to be too exacting; four feet is quite enough. In Kent, Surrey, etc., in England, we have grown lucerne on land on the chalk formation, where the rock was certainly not four feet from the surface and there both lucerne and sainfoin did well.

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#### SIZE OF SEED.

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Reading an article in the Journal in regard to the choice of seed, I feel it is not out of place to put before the readers of the paper the opinions of many agriculturists, that few persons have formed, as the result of their own experience, any definite idea as to the respective yield of the larger and smaller kernels of seed—And yet the point might be settled without much expense by a few simple experiments—It seems to me that all young farmers, at say the age of twenty, should have formed definite opinions on a question of this kind, so as protect himself from the mistakes of enthusiasts, or from the his—guidance of designing people.

Years ago I remember coming in contact with an extremely sanguine man, who expatiated enthusiastically on the great results of sowing the largest grains of barley—He had sifled out the large seeds by means of a special riddle fitted to his threshing machine; and on sowing the large seeds and an ordinary sample side by side, the former, he assured me, produced a crop six inches higher than the latter, more productive of grain and a bolder sample. An instance which came under my own observation years ago, is in direct opposition to this—A friend who

had a remarkably good stock of yellow mangel, found that his home grown seed was short of that required for the area he intended to plant.

He asked me, on going in to Bristol (Eng.) to bring him out 6 lbs. of the finest long yellow mangel seed the seedsman had—I selected out of about twenty samples, a lot of remarkably large, handsome seed, which I duly took to my friend.

A remark was made as to the extraordinary size and beauty of the seed, and my friend's comment was "I have grown mangel thirty years and have never seen such seed as this." The following October I saw the field on part of which the fine seed had been sown, the other part having been drilled the same day with home grown seed. The difference in the roots was marvellous probably from 5 to 10 tons per acre in favour of the home grown seed.

The roots produced from the large handsome seed were undersized, full of fangs and contained many "runaways."

The other part of the field had a full crop of uniform size and neat character.

But referring to the barley. If it be true that a very striking improvement in the yield of barley, besides a great addition to the plumpness of the sample, can be so easily effected, how much labour and time have been wasted by eminent seedsmen who have been improving barley for years, but by much slower methods.

One cannot help suspecting that the increased yield of grain, and the taller straw, must have been due to other causes rather than seed. One part of the yield might have been better than another, or how did it happen that the ordinary seed (which must have contained some large grains) did not yield, all over the field, a sprinkling of tall barley having stems six inches taller than the rest? In passing on to other evidence an authority, M. deVilmorin, says that the farmers of French Flanders (where the soil is excellent for wheat) obtain their seed every year from a neighbouring canton, where the soil is poorer, and the seed smaller, but more vigorous than that of their own

growth. (1) An agricultural philosopher of the seventeenth century seems to have hit on the right principle when he said that the "best seed is the most weighty." Therefore we may take it that the heaviest, not the plumpest seed is the best for sowing. (2)

If the seed stems of a turnip are pruned at blossoming time, the nutriment will be diverted with a smaller number of pods, and the seeds will be considerably enlarged but it will be found that these seeds will prove inferior in vitality to those of ordinary size. This should be an interesting experiment for them to make at Compton, and the same pruning might be tried on the stems of mangel saved for seed.

An experimenter with mangels says that the largest seeds of mangels produced, with him, coarser roots with more leaves than the lesser seeds.

The reproduction part of the seeds is its embryo, which alone is essential to the production of the young plant.

The plant no doubt is nourished in its early stages, by the starch, sugar, and nitrogenous constituents contained in the bulky part of the seed. But a good seed bed is more important in the feeding of the young plant than a large seed, and if the American contrivance for cutting of the embryo end of seed corn had proved profitable, there is no reason to suppose that the removal of the greater part of the seed, for use as food, would have injured the plant, so long as the seed-bed provided for it, had been thoroughly well prepared.

The vital energy of the seed exists in the embryo, and the crop cannot be much affected by the mere size of the grain. The main points are that the germinating power shall be good and the vitality strong.

One would expect the best seed from a healthy and well grown crop, and not from one pampered with manure or producing

(1) Just what we have said of the Essex, etc. farmers and the few barley trials of our number in this periodical. Ed.

(2) And small, well filled seed will weigh more to the bushel than large seed, as they will pack in closer. Ed.



in a wet season, having rank straw and a coarse flag. Thin seeding is another method of over feeding, tending to the growth of coarse straw and large grain, bringing forth seed of a low vitality, which will probably yield a crop specially liable to disease.

W. R. GILBERT.

## The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

### HISTORY OF THE POTATO.

There has been a large amount of literature on the potato, but the whole subject connected with its history is full of interest.

By the discovery of this additional means of aliment, at a time when rapid progress was commencing, in the arts and sciences, and thus giving an additional impulse to the increase of population, mankind was provided with a cheap, hardy, easily propagated and cultivated esculent which would acceptably supplement, if not take the place, of grain and possessing many of its nutritive and salubrious qualities. As wheat is the Queen of grains and apples of fruit, so potatoes may be said to be the queen of edible roots.

The same mystery which hangs over the native place of many other plants used by man as food when in a state of cultivation, was long attached to the potato: but it has now been satisfactorily proved that it is no doubt indigenous to the west coast of South America. In Chili and Peru it is found growing wild among the rocks, in remote places, where it is not probable that the seed could have been carried by the hand of man; and what, confirms the idea, that it is there, in its primitive, uncultivated state, is, that the flowers are white, without that diversity of colour which characterizes the cultivated varieties.

Sir Walter Raleigh has the credit of introducing the Potato into Ireland, in the reign of Queen Elizabeth; but it made no progress in public esteem for more than a century, partly owing to erroneous methods of cultivation and cooking. In the reign of James I the root was sold as dear as two shillings per pound. Bradley, a writer on improvements on Horticulture, in the year 1720 could not have been very far seeing, for he says. "Potatoes are of less note than horse-radish, radishes, beets and scorzonera, but as they have their admirers I will not pass them by in silence."

Lancashire was the first county in England where the potato was cultivated as a general crop and about the same time, it was introduced to general use in Scotland.

It is a curious fact that the enterprise of a daylabourer in Scotland led to the popularity of the root. In 1728 he successfully raised a crop of potatoes on a little plot of ground attached to his cottage, and was fortunate enough to call the attention of his neighbours to the great value of this, hitherto, neglected vegetable. By the annual sale of his produce he soon realized £200 which was, to him, a fortune, thus the public attention being called to the plant it gradually made its way.

In 1743 there was a great scarcity of grain, and in those days there was no dependence to be placed on the crops of foreign countries because of the slowness of communication and transportation, and so scarcity, in many cases, meant starvation, and hence the importance of the potato became so marked as to cause its cultivation to be a regular branch of field husbandry in some parts of Scotland. But people living in the same country at that time did not have the news as we do now and in 1756, twenty eight years after the day labourer raised his crop, the good people of Scotland knew little about the potato, as the following anecdote will show.

A lady brought some potatoes in her pocket to church on Sunday to present to a friend, as a rarity: but the string of her pocket breaking as she was going out

on the dismissal of the congregation, she lost her burden in the passage, which created considerable speculation.

In England, with the exception of Lancashire, the progress of the potato into general cultivation was still slower. It was known in Yorkshire only as a garden plant down to 1760, and in the west of England only ten years later. After this period, however, its value began to be generally appreciated, and in 1796, seventeen hundred acres were grown in Essex alone, to supply the London Market. The esculent did not find its way on to the continent of Europe until considerably later, but then came gradually into common use.

The first European writer who takes any notice of the potato is the famous German Botanist Clusius, who in 1588, gives a plate of it among his rare plants.

In the year 1584—Sir Walter Raleigh was granted a patent by Queen Elizabeth to discover and plant new countries, and colonized Virginia, naming it in honour of the Virgin Queen, and from thence he either brought the roots of the potato or they were sent to him later. At any rate some were planted in Sir Walter's garden near Youghal in the county Cork; but the gardener was so disgusted with the new "American fruit" that he carried them to his master in a fit of vexation to think that all his care should have been thrown away upon such rubbish. Sir Walter, after testing the fruit himself, ordered man to dig up the "weeds" and throw them away. The gardener did so, but was astonished to find about a bushel of tuberous roots which, upon trial proved to be the soleatable part of the potato.

The written proof of the introduction of potatoes by Raleigh is given in the transaction of the Royal society of London, Dec. 1693. They were known in Ireland long before England, and they were supposed to have been introduced to the latter by the wrecking of a vessel on the coast of Lancashire which had some on board: they were for a long time known as the Virginia batate.

It is supposed that the English themselves brought the potatoes from the west India Islands to Virginia, at the time when they came from Virginia to England they were well known to the Spaniards. This will establish the conclusion that, while the Irish first received them from North America they were natives of the South as before stated. Lord Bacon observed that if "all ales were brewed with one fourth part of the potato to three fourths of malted grain it would be more conducive to health than with grain alone. Potatoes seem to have been thought of only as a scarce and curious article of diet until 1663 when a gentleman of Somersetshire read a letter before the Royal Society calling public attention to their importance and recommending their general culture as a precaution against famine. This was referred to a committee who reported so much in their favour that all who owned lands were entreated to plant them. These exertions of a scientific body, had but little effect; but the necessities of the Irish poor, thrown upon their own resources, have done more to promote the cultivation of potatoes than all the labours of the learned or the philanthropy of the patriotic.

It is strange that one hundred years after its introduction, the potato was little thought of, no doubt one reason why it was not in favour was the defective mode of its culture, and another was ignorance of the manner in which it should be cooked. Evelyn who wrote on horticulture was so ignorant of the proper mode of potato culture that he advised that they should be left in the same spot of ground from year to years; a few tubers removed for use in the autumn, and the parent plants well covered with litter to preserve them from the winter's frosts. With these fallacious methods it was not wonderful that success did not attend its culture, and what is singular, mistaken zeal in religion made some of the Scotch folks hostile to the new root: "Potatoes" said they, "are not mentioned

in the Bible"; and this was considered a sufficient reason for rejecting them.

In the latter part of the 18th. century scarcity of the grain crop and famine drove people to the use of the potato and established it as a staple root, when its excellent qualities became generally understood. "Sweet are the uses of adversity."

There was just as much hesitation about the use of the potato on the Continent of Europe as there was in Great Britain.

Not with standing that the learned men exerted themselves to make it popular, it was only by a royal edict published in its favour that the Sweedes in 1764 brought it into general use in Sweden.

The Swiss soon learned its cultivation and uses and learned the art of drying potatoes into flour, and making them into bread. Some millers in Switzerland, for some time, ground little else but dried potatoes.

It is on record that a shrewd peasant, well aware of the profit arising from the culture, bought a piece of land and paid for it in two years out of his potato crop.

The potato was introduced from England into the Netherland, and thence into Germany; and though unknown to the agriculturists of Saxony until so late as 1740, yet in 30 years there after, a small detachment of the French army, while in that country, having its supplies entirely cut off, subsisted for 8 or 10 days wholly upon potatoes. It is probable that the poisonous and disagreeable quality of the tops and fruit of the potato made people in France cautious about the use of the tubers, for their most zealous and distinguished chemist Parmentier, could only overcome their prejudice by a little stratagem to make the use of the plant popular. He presented a bouquet of potato flowers to Louis XVI, and the king was graciously pleased to receive it as an emblem of the plant which was most likely to guarantee his subjects against the horrors of famine. The countries, always ready to flatter the taste of their

monarch, hastened to cultivate an article honored with his regard: and thus France, in a great measure, owes the extensive culture of potatoes to courtly flattery.

### THOROUGHNESS.

One of the great causes of failure in life is a lack of thoroughness and persistency: it is not uncommon to see a person, full of enthusiasm at the beginning of an undertaking, drop off after the novelty has worn away; such people never succeed. "Whatsoever thine hand findeth to do, do it with thy might," says the wise man. "Be sure you are right, then go ahead" is another piece of good advice, but "keep going ahead to the finish," may well be added. In art it is worthy of remark that the works of the great masters are chiefly valuable on account of the thorough manner in which they are finished in the most minute details.

Literature furnishes another example: how complete are the writings of Shakespeare, how well he holds the mirror up to nature: and with what perfect and consistent exactness he delineates the character of the gentleman or the villain!

The quality of a manufactured article depends upon the "thoroughness" with which every part has been made and fitted together: a machine would be useless, if every piece was not perfect and in its right place: the value of a farm is estimated by the thorough manner in which it has been cultivated as much as by the nature of the soil.

In the commonest affairs of life thoroughness always tells. She cannot be considered a good housemaid who runs over her work in a slipshod, careless manner, leaving dust in the crevices and cobwebs in corners of the room she has pretended to clean. The cook who does not follow her recipes carefully and see that her dishes are well prepared and served will not give satisfaction: the groom, who only partially grooms the horse, is guilty of cruelly treating the noble animal and doing him an injustice.

We might apply this reasoning to all the range of human industries, but to those relating to rural affairs it comes with additional force, because results depend so much upon the thorough way in which work is done. For instance, if draining is not thorough, the drains will be frequently stopped and become useless until repaired, and the labour and expense involved in their construction will be thrown away. It is too frequently the case that ploughing is not looked upon as the important part of tillage which it really is, and, unfortunately, too many ploughmen think more of size of the piece of land they can go over in a day than of the proper manner in which the work has been done, therefore the crop suffers for the want of a seed bed of soil of equal depth and consistency. Again whether the cultivation is thorough and persistent or not in the destruction of weeds, they will be persistent in their growth, and if neglected will soon choke and smother the crop, and rob the land, of the food which should nourish it.

After a crop is well on the way of growth, it is liable to the attacks of many enemies such as insects and fungous parasites, these must be watched for and the means taken to prevent their ravages by the use promptly, of the various preventatives or remedies which are now well tested and understood. In this respect many farmers and gardeners are not so thorough as they should be, either neglecting to spray their crops of fruit or vegetables with the specifics recommended, or not doing it until the mischief has been done, and then only partially. The chemicals which will effect prevention or cure for most diseases of plants are simple and cheap, and seeing the vital importance of their use, the time occupied in their application should not be a consideration, nor will it be in the mind of the cultivator who thoroughly attends to his business. It is true that a good deal of the spraying will have to be done at the busy season, perhaps in the haying, but even then a dewy morning, when no work

can be done to the hay, will afford the best opportunity, to use the sprayer. I have no patience when I see a crop, we'll say of potatoes, ruined or even partially injured by blight or bugs, and hear the lame excuse that the owner had no time to attend to it, or that spraying is too much trouble.

In everything we do, let us be thorough and pains taking. In a garden the ground should be thoroughly dug and manured: potted plants carefully potted and thoroughly watered. In the barn the cow must be thoroughly milked, and all the animals well and regularly fed. When thoroughness is noticeable, in doors and out, we may reasonably conclude that thrift will follow and if carelessness is apparent, that failure, sooner or later will be the inevitable result.

In the education of our youth let us teach them above all things to be thorough and persistent in all they undertake, and never satisfied with anything less than having given their best attention to the smallest detail and turned out their work as nearly perfect as possible. In due time, to be thorough will become habitual, and task will become less irksome as their successfully accomplishment rewards our well directed and persistently carried out efforts to attain the end in view.

#### MOONSHINE.

Some people scoff at as a "bag of moonshine" the idea that crops, planted before the full of the moon, thrive and yield better than those sown during her wane, but perhaps, if we submit the subject to a philosophical test we may find that there are good ground for the belief.

The vast distances of the sun and moon from the earth are interesting and awe-inspiring: these planets are however, of the greatest importance to us because they are the source of our force, energy, light, and heat. The human mind can form no adequate conception of the magnitude of the influence that the sun and moon have upon all things terrestrial, especially

when we consider that their power upon us is only what is intercepted by the earth in its passage thorough illimitable space.

Force, or energy, is produced by the attraction of gravitation, a law of the universe, discovered by Sir Isaac Newton, or at least exemplified by him, by which bodies are attracted to each other, and which holds the earth and moon in their orbits and prevents them moving in a straight line.

The mutual attraction of the sun and the earth are equivalent to a powerful cord connecting the two. It is calculated that the strength of this, invisible, cord is as great as if every square foot of the earth's surface, lighted by the sun's rays, was connected by a steelrod, between one third and one half of an inch in diameter. It is well known that the tides, are caused by the attraction and counter attraction of the sun and moon.

As regards heat; the amount of solar heat received annually by the earth is sufficient to melt a layer of ice 136 1-2 feet thick, covering the whole of the earth, surface.

With these scientific facts before us, is it not reasonable to assume that during the time in which half of the globe is exposed to the influence of both sun and moon, there might exist certain climatic conditions which would be more favourable to growth in the light than, in the darkened portion which is uninfluenced by either sun or moon during a portion of each twenty four hours.

It seems then but reasonable to suppose that while the moon is making; that is to say, increasing in strength and energy; crops would be more likely to thrive than when she is waning or decreasing in power.

Hence the old theory that the moons phases may have some effect upon plant and animal life may not be so fallacious as some imagine.

## The Dairy.

### COMMON DEFECTS OF DAIRY PRODUCTS.

At the Dairymen's Association Convention held at Rivière du Loup on the 9th and 10th ult. the question of the improvement to be effected in the quality of dairy products was discussed at length. Of the addresses delivered on this subject and of the discussion which followed we prepared the following summary which cannot fail to interest our readers.

The chief discussion was on the competition between cheese factories, the causes and the evil effects of which were clearly brought out by Mr. Plamondon, Asst. General inspector. According to him the buyers should regulate the prices paid to the cheese more according to the quality of this product, cutting down the prices of poor cheese so as to give cheese of superior quality an advantage. As it is now, all the cheese of a district are often bought at the same price, regardless of quality, and as a consequence, makers strive rather for quantity than for quality. Hence the quantity of open and soft cheeses with which the market is flooded.—In answer, on behalf of the buyers, Mr. Hodgson stated that the position of the dealers is a very difficult one. The least cutting in prices gives rise to endless complaints on the part of the makers, for the makers alone suffer for the inferior quality of their products. It is evident that if the system followed in New Zealand, viz., that of having all dairy products inspected by Governments officials and classed according to their quality, were adopted in this country, a great improvement would be made.

The subject of frauds in the weighing of milk also brought a very lively discussion. All persons present were of the opinion that this practice is one of the most prejudicial to dairy interests and that the time had come to put a stop to it once for all. These frauds too are caused by com-



petition. Some factories, by cutting down the weight of the milk received, try to make their patrons believe that they can make more cheese out of a given number of pounds of milk than the makers at neighboring factories. Of course, should these factories only take a certain percentage off the weight of the milk delivered, no harm would be done to the patrons, as the milk, in consequence, fetches a higher price; but, as Mr. Plamondon clearly brought out, makers take off 5 or 10 lbs from each milk can, regardless of the quantity contained. Hence, the patron bringing a small quantity of milk suffers much more than he who brings a larger quantity. A point not hitherto known was also made clear during the discussion: the cutting of the weight is not always done at the weighing time, but oftener when the time for payment arrives. The makers find it easier to cheat in this way, as patrons often keep a careful watch when their milk is being weighed, but do not keep an account of the amount of milk delivered daily. The remedy in this case lies with the patrons.

Mr. Clement, delegate of the cheese and butter association of the Montreal Board of Trade, particularly insisted in his address on the little care given to the boxing and shipping of cheese. The wood of which cheese boxes are made is often too thin, which causes the sides of the boxes to break during the loading, or too green, thereby keeping the cheese moist and causing it to mould. The cover and bottom of the boxes are often made of too many pieces, which do not hold together well. The wood should be at least 1-5 of an inch thick, dry and sound. Greater care should also be paid to the transport of the cheese from the factory to the railroad station. Moisture, heat and dust all deteriorate its quality. Waggon should be fitted with an impervious linen cloth or calico cover.

The appearance of the cheese also counts for a great deal in its value and should not be neglected. The uniformity in weight should also be carefully looked to.

Mr. Clement, as well as those who preceded him, is of opinion that the poor quality of cheese is almost entirely due to the large number of poorly equipped factories. Half of the factories of the province could be shut with great advantage to all interested. There are many parishes that could grow rich with one factory only, that now can hardly make both ends meet, because they divide their milk between three or four factories, thus increasing the expenses, often to the detriment of the quality of the product.

Regarding butter, Mr. Clement said that a very poor saving is done by purchasing thin parchment paper, and boxes and tubs of poor quality. With a thin paper, butter takes the taste of wood which causes a severe cutting in its price. Parchment-paper should weigh 40 lbs to the ream, and nothing but the best tubs or boxes be used. When the factory is far from the station, it is best to put the butter boxes in linen bags.

An important point was also strongly insisted upon: there should be exactly 56 lbs of butter in each box. There is no advantage whatever for the maker to put in one or two pounds more, for only 56 lbs will be paid for. On the other hand, if the box should contain one fraction of a pound less than the weight given, one pound will be cut off. Hence the maker will find the greatest profit in giving the exact weight—no more—no less.

C. M.

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#### SKIM MILK FEEDING EXPERIMENTS.

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Prof. F. B. Linfield, of the Dairy Department of the Utah Experiment Station, has been conducting a series of feeding trials with skim milk a full report of which is published in Bulletin 57 of that Station. He has also prepared a summary for the press which gives the main facts and conclusions, freed from the daily details, and these we transfer to our columns as follows:

(a) Experiments in pig feeding.

1. Skim milk when fed in combination with grain, makes a much more economic ration for hogs than either milk alone or grain alone. The milk and grain fed lots required 2.58 pounds of digestible matter, the milk fed lots, 2.85 pounds, and the grain fed lots, 3.19 pounds to make one pound of gain in live weight.

3. When fed in combination with grain, skim milk has 63 per cent greater feeding value than it has when fed alone, 100 pounds of skim milk taking the place of 23.2 pounds of grain in the former case and 14.2 pounds in the latter.

4. The hogs fed on the milk and grain ration made much more rapid gains than either those fed on milk alone or grain alone. The time required to make 100 pounds of gain was 79 days for the hogs fed on milk and grain, 116 days for those fed on grain alone, and 147 days when the food was milk alone.

5. When the skim milk and grain were fed in the proportion of 3 pounds or less of skim milk to 1 pound of grain, the return for the skim milk was greater than when a larger proportion was fed. When fed in the proportion of 2 pounds of skim milk to 1 pound of grain, 100 pounds of milk took the place of 31 pounds of grain, but when fed in the proportion of 4 pounds of skim milk to 1 pound of grain, only 24 pounds were displaced.

6. Hogs fed on milk alone gained very slowly and did not keep in good health; in some cases they were off their feed so frequently that a change of feed had to be made. The milk and grain fed hogs, however, without exception, kept in good health.

7. Young hogs fed on grain alone did not do well and appeared to make poor use of the food they ate. The hogs on this ration required 2.92 pounds of digestible matter to make one pound of gain, at an average weight of 73 pounds, and only 2.83 pounds when they weighed 127 pounds. When the food was changed to milk and grain, a marked improvement was effected in their growth and thriftiness.

8. Those hogs fed on milk alone or grain alone, when on pasture, did much better than hogs similarly fed in small pens. The milk fed lot, on pasture, gained .05 pounds more per day and required .54 pounds less dry matter to one pound of gain than did the lot fed in pens, and the grain fed lot, on pasture, gained .3 pounds more per day and required .88 pounds less of dry matter to each pound of gain. On the other hand, however, the hogs fed milk and grain in combination did better in the pens, gaining .05 pounds and required practically the same amount of food to make a pound of gain.

9. The appetite of the hogs and the palatability of the food seemed to have a very beneficial effect upon the rapidity and economy of the gain. The milk and grain fed hogs ate .37 pounds more digestible matter per day than those fed on grain alone, 1.46 pounds more than those fed on milk alone. They gained .41 pounds per day more than the hogs fed grain alone and .59 pounds more than those fed milk alone. They also required .51 pounds less digestible matter for each pound of gain than did the hogs fed grain alone, and .27 pounds less than the hogs fed milk alone.

10. Young hogs are in every way the more economic producers of pork. The hogs fed milk and grain required 62 per cent more to grow a pound of live weight when they weighed from 38 to 100 pounds, and for those hogs fed on grain alone the difference in favor of the smaller weight was 56 per cent.

(b) Experiments in calf feeding.

1. Calves may be raised very profitably on skim milk when it is properly fed.

2. From the standpoint of gain in live weight and quality of meat, whole milk is the best food for calves, but it makes too expensive a ration to be profitably fed. Butter fat has been worth 16 cents per pound. The gain in live weight of these calves at 4 cents per pound returns but 10.7 cents per pound for the butter fat fed, at 3 cents per pound for the gain 8 cents per pound.

3. The calves whose rations were com-

posed largely of skim milk, while they gained one-half pound less per day yet required practically the same amount of dry matter to each pound of gain as did those fed on whole milk, showing they made just as good use of the food.

4. The calves fed whole milk alone gave a greater proportion of dressed meat to live weight than did those fed on skim milk, and also gave more fat on the carcass.

5. Young calves, up to three and one-half months of age, required less milk and less dry matter to each pound of gain than did the hogs. When the calves were five and six months old, however, more dry matter was required, but at least half of it was hay.

6. When fed to calves, fully as large financial returns were obtained for the skim milk as when fed to hogs. With the gain in live weight at 4 cents per pound, the calves returned 22 cents per hundred pounds for the skim milk and the hogs 22.8 cents. If the gain in live weight was worth 3 cents per pound, the calves would return 5 cents per 100 pounds more for the milk than would the hogs.

A copy of the Bulletin may be had free on application to the Director of the Experiment Station, Logan, Utah.

HOARD.

#### **SUB-EARTH DUCT CURING ROOM.**

We have long felt the need of something different in the way of a curing room for our cheese. We felt the need of a room where the temperature could be controlled and held to about 70 degrees or less. The old style room where the temperatures run wild was anything but satisfactory. The high temperatures which we were bound to get in the summer months not only gave the cheese a sharp, unpleasant flavor, but also troubled us with an undue amount of shrinkage. On any of our hot summer days, if you would go into our old-style room, you would find the grease literally running from the shelves and standing in pools on the floor. The sub-

earth duct room practically eliminates all this trouble.

This room is provided with a cold sub-earth air duct 100 feet long and about ten feet under the surface of the ground. The air in passing through this duct is cooled to about 65 degrees. Of course the room must be so constructed that practically no air will be able to enter from any other source than this duct.

For the month of July the highest temperatures of the new room were 78 degrees, on the 4th, 6th and 7th of the month. In the old room the temperature got as high as 94, on the 5th and 15th of the month. When the weather is much cooler there is not so much difference in the temperature of the two rooms. The lowest temperature of the new room for July was 57 degrees on the first of the month, while the old room was only 59 degrees on the same morning. The average minimum temperature was 66 degrees in the new room and 74 degrees in the old room, while the average maximum temperature was 73, and 83 in the old room, thus showing a difference of 8 degrees in the minimum and 10 degrees in the maximum temperatures of the two rooms. The mean temperature of the intake well was 63 degrees. On some of the hottest days there was a difference of 20 degrees between the old and new room.

As I have said before, at these temperatures a cheese will not shrink as much as in the cold room. To be sure of this, comparisons have been made during the summer taking two cheese of the same day's make and putting one in the new room and one in the old. These cheeses are weighed every 10 days and their shrinkage noted each time. It has been shown to us in this way that we save in shrinkage 2 to 2 1-2 pounds of cheese to every 100 pounds. Although this seems like a very small saving on each cheese, it makes a good many dollars difference in the receipts of the factory at the end of the season.

The manner of constructing the room



will necessarily be governed by local conditions. Our own room is built of hollow building blocks, 4 x 6 x 12 inches, with a partition lengthwise through the center making two air spaces. The side walls are stripped and lathed and plastered, making three dead-air spaces. The floor is of Portland cement. The ceiling is sheeted, top and bottom, on 2 x 4 joist, covered with building paper and ceiled with matched ceiling stuff on the under side. The windows are fitted with double sash and the doors are also double. In one corner of the room is a dry well 1 x 2 1-2 feet. From the bottom of this three rows of ten inch sewer pipes are laid, side by side, at an average depth of 10 feet, a distance of 100 feet, terminating in another dry well from which a built shaft of 18-inch sewer pipe rises about twelve feet above the surface of the ground. On top of this shaft is an intake cowl made of galvanized iron, so constructed that it swings head to the wind at all times.

The outlet for air from the curing room is in the opposite corner from the inlet, is 12 x 24 inches, and extends just above the peak of the roof.—H. C. H., in "Ohio Farmer."

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#### MR. WHEATON'S CANADIAN DAIRY NOTES.

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##### *Canadian Dairy Laws—Their aid to the dairy—Methods of Dairy instruction.*

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ED. HOARD'S DAIRYMAN:—Mr. J. S. Woodward, of the New York State, who rendered such valuable service at Ontario Farmer's Institutes, last winter, in a recent issue of the "Rural New Yorker" pays a fine tribute to our laws governing the manufacture and sale of spurious dairy products and the methods adopted for maintaining and improving the quality of our cheese and butter. Referring to this matter he says: "The government assists in putting all dairy products in the old country markets in the very best form; they will not under any

circumstances permit the making of skim cheese or bogus butter or oleomargarine, even to be sold as such, and in case any shipment of cheese or butter is not up to the desired mark, an instructor is at once sent to the factory in which it was made, and he stays until the trouble is discovered and remedied. It also employs several dairy instructors whose duties are constantly to go from factory to factory to see that all are kept up to the highest excellence.

This is a very high compliment indeed, and is in the main, correct. Canadian dairymen have reason to feel proud of their record for honesty and honest dealing in the production of cheese and butter. No laws upon our statute books to-day are of more value and have rendered more direct service to our people than those preventing the manufacture and sale of filled cheese, bogus butter or oleomargarine, within the confines of the Dominion.

There are many dairymen to-day who fail perhaps to realize fully the real significance of the work of the leaders in dairy thought of some fifteen or twenty years back who were instrumental in having this legislation enacted. Little did they think that such magnificent results would follow their efforts. But their wise counsel prevailed and our dairymen to-day are reaping the benefits of it in the very large increase in our exports of dairy products.

This all comes of starting right. Had we been advised in those days by men greedy for present gain or lukewarm on matters of this kind it is hard to say where we would have landed. Perhaps we would have a great "octopus" to deal with, such as our "Yankee" brethren are endeavoring to cope with at the present time; reaching out his long, slimy tentacles, in an attempt to crush the life out of all legitimate dairy enterprises. Our population would have been ruined, and instead of exporting annually some twenty-four million dollars worth of cheese and butter, we would have to be content with an output of less than half that amount.

Without a good reputation in the old

land for high quality in our dairy products and an ever growing demand there for our butter and cheese, there would not be much money in the dairy business for the Canadian farmer. He has no large home market, such as the farmer to the south of the line has to fall back upon.

An essential feature then to success in dairying in Canada is holding and increasing our trade with Great Britain. This is why our government, our dairy associations and everyone connected with the business, are bending their energies in the direction of developing the market for Canadian dairy products in the old land.

The picture Mr. Woodward presents of our methods of instruction and inspection is a somewhat roseate one. Though the system is perhaps not so elaborate as his description would seem to indicate, yet we can truly say that a very great deal is being done in the way of granting assistance to makers and factories needing help. With some fifteen hundred cheese factories and creameries in Ontario alone and with about as many more in Quebec, besides a few hundreds in the other provinces it is no easy task to reach every factory and keep everyone in line.

The only province where anything like a successful attempt is being made to reach every factories is in Quebec. There the syndicate method of employing instructors is in vogue and the factories are so grouped that every maker has instruction regularly during the season. This is the proper method and is the ideal that should be kept in view in the other provinces.

Some few years back the Western Ontario Dairymen's Association, started something of this kind in this province, but with only a fair measure of success. Ontario factorymen seemed to feel independent of any such scheme; while some makers and factories were anxious and willing to assist both financially and otherwise in helping the thing along, others were not so inclined and consequently the matter was dropped, as it was found impossible to carry on successfully

unless all the factories in a district co-operated.

There are some eleven or twelve instructors employed by the two associations in the province which receive government aid for the purpose of giving assistance to the makers in the factories. They do not, however, visit every factory, but only those making application for their services. To visit every factory in the province, say three times during the season would require at least fifty instructors.

The whole time of the instructors should be given up to instructing the makers in the best methods of improving the quality of the product, and this cannot be done if the instructor has to spend half the time he is with the maker in testing milk and hunting up delinquent patrons. There is really no need of the instructor spending his time in this way. With Babcock testers and other instruments for the examination of milk, so readily available, every factory should be in a position to do its own inspection and prosecution.

If this cannot be done let our factories adopt the more rational and fairer method of paying for milk according to its quality. It is strange what a back number this paying for milk according to its quality has become. It is almost impossible to arouse any enthusiasm over the subject. And it is practically a dead letter so far as the great majority of our factories are concerned. Many of them tried it a few years back, but for some reason or other, best known to themselves, have returned to the old pooling plan, thus putting the temptation in the way of the "slippery" patron to add a little water to or take a little cream off the milk before forwarding it to the factory. J. W. WHEATON, Toronto, Canada.

#### **THE MOST PROFITABLE COW.**

ED. HOARD'S DAIRYMAN:—HOARD'S DAIRYMAN of June 15th, publishes an article from "Farm, Stock and Home," regarding some experiments carried on by Prof. Haecker, of Minnesota, in which he

shows the cost of the pound of butter, and total cost of food, for each of several cows, tested for one year, at the Minnesota Experimental Station.

Like most of Prof. Haecker's Bulletins, the work is not carried far enough to be of any benefit to dairymen, but its results are left in such shape as to be actually misleading to the average reader.

I am not surprised at such work as this, coming from Prof. Haecker. It is but the usual way of putting the results of his experiments before the public, but I am surprised that HOARD'S DAIRYMAN, a paper not usually caught with chaff, should use half a column in commenting, editorially, on the value of the experiments. I clip part of their comments, which are as follows :

"It is the work of wise dairy papers, dairy schools, experiment stations, and all the machinery of modern dairy education to get men who keep cows, to consider the cost of producing butter, according to the cow that yields it. Here is one of the big secrets of making money with cows. Yet it is a secret that a host of farmers will not consider."

Now let us see just what Prof. Haecker has given the DAIRYMAN to consider. I will not go over all the cows he mentions, but take the Jersey and leading Holstein. The first mentioned consumed food to the value of \$17.89 and produced butter at a cost of 5.70 cents per pound.

The Holstein consumed food to the value of \$31.56, and produced butter at a cost of 5.70 cents per pound. She must, therefore, have made during the milking period 313 pounds of butter. The milk of the average Jersey tests about 5 per cent. Assuming this one to be an average cow, she would have given during the milking period 6,026 pounds milk. Had this been sent to the creamery, the owner would have had about 4,475 pounds skim milk returned to him.

The Holstein cow consumed food to the value of \$31.56, and produced butter at a cost of 6.06 cents per pound. Now, the way the original article reads, and the

comments by the Dairyman, still further impress upon you the Jersey cow was considerably in the lead over the Holstein, as the most profitable cow to keep. Let us, however, do a little figuring and see which cow was really the money maker.

The Jersey cow consumed food to the value of \$17.89 and made butter at a cost of 5.70 cents per pound. She must, have produced 520 pounds butter during her milking period. The milk of the average Holstein tests about 3.5 p.c. Taking this one, like the Jersey, as an average cow, we see she must have given 14,857 pounds milk during her milking period. Had this been sent to the creamery, the owner would have had returned 12,777 pounds skim milk.

The calf from the Jersey cow would not have been worth over \$2, while the Holstein calf would be worth, at least, \$5. We keep both breeds of cattle, and I can say positively, that with us there is more difference than that, in the value of the calves they have dropped, as we usually get from \$6 to \$7 for a Holstein calf, and a \$1.50 to \$2 for Jersey calves.

Now, let us see what each of the two cows earned during this milking period. Will figure the butter as being worth 20 cents per pound, and the skim milk as worth 15 cents per 100 pounds ; both these figures are what are usually used by stations and HOARD'S DAIRYMAN in computing value of product. The account shows as follows :

#### JERSEY COW.

313 lbs. butter at 20c.....	\$62.60
4,775 lbs, skim milk at 15c per 100..	7.17
1 calf .....	2.00
	<hr/>
	\$71.77
Less cost of feed.....	17.89
	<hr/>
Net profit .....	\$53.88

#### HOLSTEIN COW.

520 lbs. butter at 20.....	\$104.00
12,776, skim milk at 15 per 100.....	19.05
1 calf .....	5.00
	<hr/>
	\$128.05
Less cost of feed.....	31.56
	<hr/>
Net profit .....	\$96.49

Here we find that the cow that Prof. Haecker and HOARD'S DAIRYMAN would have us believe to be the most unprofitable one, has actually earned \$42.61 more than the supposedly more profitable cow. In conclusion, let me say that the dairy writers of the day are, to a great extent, misleading in their teaching, as they do not seem to realize that the average dairyman takes their work literally, and does not stop to figure out results for himself.

In proof of this, will say that the most profitable cow in our barns last month, gave milk that tested but 3 p. c. butter fat, while the most profitable cow milked last year showed an average of 2.93 p. c. butter fat in her milk, yet she made almost 600 pounds of butter.

So I say that our dairy journals, instead of continually warning the dairymen to beware of some pet cow that he suppose to be his best, on account of large flow of milk, had better at the same time, point out the fact that possibly the cow giving but 3 p. c. milk, is paying the board of two or three 5 p. c. cows.

H. B. DAGGETT.

Manager McGeech Farms.

Lake Mills, Wis.

## The Poultry-Yard.

We regret to have to announce to our readers the death of our valued contributor Dr. Andres, which occurred, after an illness of more than three months, on the 23rd inst.

### DUST BOXES.

It is necessary to provide dust boxes for the fowls during the winter months if they are to be kept free from lice. If the soil in the yards is naturally dry and porous, abundant opportunities will be had for dust baths during the warm summer months, but during the late fall, winter, and early spring some artificial provision

must be made. A comparatively small box will answer the purpose if the attendant is willing to give a little attention to it each day. These boxes should be placed so that they will receive some sunshine on each bright day, and be kept well filled with loose free earth. Road dust procured during the hot, dry months of July and August from much-travelled roads has no superior for this purpose. Probably there is no way in which the poultryman can better combat the body-louse than by providing dust boxes for his fowls.

### YARDS OR PARKS.

Where fowls are kept in confinement it will be found best to provide outdoor runs or yards for them during the summer months. Give them free access to those yards whenever the weather will permit. The most economical form, everything considered, for a poultry yard is one much longer than wide. Two rods wide and 8 rods long is sufficient for 50 fowls. When ever a poultry plant of considerable size is to be established it will be found most economical to arrange the yards side by side, with one end at the poultry house. The fences which inclose these yards may be made of poultry netting or pickets, and should be at least 7 feet high. In either case it is the best to have a board at the bottom, for sometimes it will be desirable to give quite young chickens the run of these yards. If the poultry yards are constructed as described, there is sufficient room for a row of fruit trees down the centre of the yard and still leave ample room for horse cultivation on either side, either with one or with two horses.

These yards are to be kept thoroughly cultivated. If thought best, grain may be sown before cultivation to furnish part of the green food for the fowls. Of all fruit trees, probably there are none that are more suitable for the poultry yard than the plum. The droppings of the fowls will manure the trees, and the fowls as

insect destroyers perform a great office in protecting plums from the curculio. After the trees are once well established, a crop of plums should be secured nearly every year. These, too, will require no extra cultivation. The plum trees perform a valuable service in providing shade for the fowls. Where trees are not available, sunflowers may be used for this purpose with a considerable degree of satisfaction. However, some protection must be given the plants until they are well established, and even then many plants will be destroyed unless the fowls have an abundance of green food all the time.

Hamburgs and Leghorns, if they are frequently moved from one pen to another, will sometimes give the owner considerable trouble in flying over fences, even though they are 7 feet high. If it is possible to place the fowls when they are quite young in the yard where they are to remain, much less trouble will be experienced. It has often been noticed that hens would remain peacefully in the yard where they had been reared, but if moved to another yard would give the owner more or less trouble by flying over the inclosure.

## The Grazier and Breeder.

### HOW THE CHAMPION STEERS WERE FED.

Much interest has been taken by breeders and feeders in the unprecedented high prices paid for the champion fat steers at the great Chicago show. The phenomenal price of \$1.50 per lb. for a pure-bred Aberdeen Angus yearling, winner over all at the Chicago Fat Stock Show, is certainly a record breaker. This steer was sold at auction. He weighed 1,430 lbs., which, at the price paid, equals \$2,145 in all. The highest previous price heretofore was \$750, paid for a steer raised by Her Majesty the Queen. Though the \$1.50 per lb. steer was a model and one of the greatest fat stock animals ever produced, having

all the requisites, such as age, form, flesh and quality, the price realized must not be measured by the intrinsic value of the animal. He would, no doubt, have distanced all competitors on this score; but, as it was, the most extravagant price was obtained through several of the large Chicago packing houses bidding against each other for advertising purposes. Schwarschild & Sulsberger, who paid the high figure obtained, are just opening up in the packing business at Chicago and were looking for some means of bringing their names (pretty long ones, too) before the stockmen of the west.

There was, however, another sale of cattle, which, in many ways, was just as remarkable. Prizes were offered at the show for the best car-load of fat cattle. The champions in this class were fifteen high-grade Angus steers, bred, fed and owned by L. H. Kerrick, Bloomington, Ill. These were an exceptionally fine lot of steers, and sold for the high figure of \$15.50 per 100 lbs., said to be the highest price ever paid for a carload of cattle on any market. They dressed .6437 per cent. of beef—not quite so large a percentage as made by the same feeder's cattle a year ago, which dressed .6564 per cent. This is explained by the fact that the cattle stood in the yard nine days before slaughter, whereas last year they stood only one day.

It may be of interest to Canadian feeders to know something of how these champions were fed. The following account of Mr. Kerrick's methods is taken from "The Live Stock Report" and will be found of value:

"Mr. Kerrick's methods, wonderfully successful as they are, are quite simple, the vital points in his system being growth and gentleness. He 'grows beef,' and from the time the calves are dropped the idea of growth is kept constantly in mind. Not that they are forced in an unnatural, hot-house style, but by the judicious use of flesh-forming foods from 'callhood' the youngster is gradually grown into the superb beef form that cha-

racterizes the bovine of the Kerrick farm.

The grand champion steers shown and marketed by Mr. Kerrick last week were highgrade Angus two-years-old—calves of '98. Their magnificent conformation and richness of flesh is impossible to adequately illustrate, but the fine half-tone on our first page will give a better idea than any written description. In general the feeding methods employed by Mr. Kerrick with all his cattle apply to this particular lot. His calves are taught to eat oats, meal corn stover, etc., before they are weaned, so they are grown on a rapid schedule right from birth. Proper caution is, of course, used, especially the first year, after which time they have what they will eat, a varied ration, of which corn is the basis, being provided. Oats are used quite freely and a little bran is fed, as a laxative and digestible, whenever its need is indicated. Mr. Kerrick also advocates the use of oilmeal occasionally as an appetizer. He feeds twice a day in ordinary troughs out in the open.

Mr. Kerrick emphatically states that the whole process of producing these grand bullocks was no more complicated or expensive than the methods ordinarily employed in fattening a bunch of cattle. As already outlined, there was no defined time or period at which it could be said that he began to feed the cattle; they were simply grown into their market shape and condition, their ration being planned with a view to keeping them growing while putting on flesh.

"A point which Mr. Kerrick always emphasizes, and rightly, is the importance of quiet, gentle handling. 'No whips or whoops' is the imperative order to his men. Kindness is the rule, and so well is it appreciated by the animals fortunate enough to be born under the care of such a master that a person familiar to the cattle can walk to them, even in an open field, and scratch their board backs a process which they greatly enjoy. In fact, they will not only stand still, but many of them will come to their owner and attendants to be rubbed and scratched.

'We never swear in the presence of the cattle,' remarked Mr. Kerrick with a humorous twinkle in his eye. Those who know this quiet, unassuming gentleman, who bears with becoming modesty the success and honors which have come to him in many lines, will understand and appreciate the moral intended to be conveyed."

## Swine

### PRICE OF BACON HOGS.

There does not appear to be much advancement in this direction. The deliveries of hogs on Toronto market on October 26 were 4, 013, while on June 8, when choice bacon hogs sold for \$6.87 1-2, per cwt. the deliveries were only 1,600. During July, August and September last, when the product from the high priced summer hogs was placed on the British market, our packers were not able to supply much more than 50 per cent of the bacon the English trade could take. But now, at the approach of the Christmas trade, when the markets are flooded with poultry and game of all kinds, and the demand for bacon falls off very materially, there is the largest supply of Canadian bacon to go forward and our farmers have the most hogs to sell. To remedy this the packer and the farmer must co-operate more than they do and regulate the supply more in keeping with the demand.

But the Canadian farmer is not the only producer who will suffer from this drop in values. Last week Danish bacon dropped 7s. per cwt. as compared with the week previous, which means a shrinkage of more than \$1 per cwt. in the price the Danish farmer gets for his hogs.

Then prices are still better than they were at this time a year ago. On Oct. 28, 1899, select bacon hogs sold on Toronto market at \$4.37 1-2 per cwt., and thick fats at \$4 per cwt. A great many cheese factory hogs are put upon the market at this season of the year, which has increased the supply very much and perhaps reduced

values more than they would otherwise be.

The general conditions affecting the bacon trade, notwithstanding this lowering of values, are not at all discouraging. The supplies of bacon in England have been short as compared with last year. During the past few months the weekly killings in Denmark have been about 5,000 short as compared with corresponding weeks of last year. Then, as we have already stated, the Canadian supply has been short, so that prospects are good for a reaction in trade as soon as the Christmas season is over. And if values do not go any lower than they are at the present time, with the prospects of a rise towards the beginning of the year, the situation is on the whole a very hopeful one.

There has been a great improvement in the finishing of bacon hogs this year. There have been fewer skips and undersized hogs this summer than for some years back, showing that our farmers are learning better to breed and feed hogs for the bacon trade. All signs point to rapid advancement along many lines in connection with the export bacon trade in this country. The quality is improving and there is a growing demand for the Canadian article in Great Britain. If, as we have already pointed out, farmers can adjust their supply more in keeping with the demand, there is no reason why the business cannot be largely increased with better profits for all concerned.—“Farming.”

#### RAPE FOR HOGS.

June 6th we sowed to rape about three fourths of an acre of land, the plat being a part of an old orchard that had been used for a feed lot more or less for twenty years. One corner of the plat had been fenced off and used two years ago for a feed lot for dairy cows, springers, in which to feed a lot of clover hay. The manure made was not removed till well rotted. Consequently this part of the plat was very rich. Another part of the plat was a clay point, quite thin.

The rape came on quite rapidly. As we

did not need it for the hogs it was allowed to grow till about the second week in August. At the time it ranged in height from a few inches to three feet. We then turned on it a lot of lambs that in the course of two weeks stripped it of everything but stalk and stems. They were then taken off and the rape allowed to come on again. Early in October we put on it two brood sows with litters, one of the sows farrowing after being turned in. Also a third sow in farrow was soon turned in. Now we have on the plat three brood sows, fourteen shoats large enough to wean, an aged boar and two young sows. They have all their other feed, corn and slop, but we notice that they all are hearty feeders on the rape and are thriving first rate.

A neighbor also sowed a plat of about three acres, and we think was rather disgusted with the crop for a time, but now he tells me his hogs are feeding on it at a wonderful rate. We notice that the sharp frosts we have had are lacking it some. The important feature we would call attention to is the length of time it will give green forage. From this plat we will have been green forage four months at least, allowing seven weeks for it to start, which was longer than was necessary. Hogs do better on it than either sheep or cattle, as there is no danger of bloating. We shall probably grow it more extensively in the future. It can be made to play an important part in swine growing on most every farm for the reason that it can be sown any time during the growing season from April 1st to September 1st. It finds a place in small lots rich with manure that are usually allowed to grow up in weeds, and will yield a profit in such places. It revels in soil rich in manure, in fact cannot get too much. It is much more sightly in these small lots than a crop of weeds that furnish seed for the rest of the farm.—John M. Jamison in Stockman and Farmer.

**PIGS ENRICH A DAIRY FARM.***E. R. Towle, Vermont.*

One object in keeping swine on the dairy farm is the making of manure. Where the dairy is an average sized one, and especially where there is milk the year around, the keeping of swine can be made fairly profitable. The farmer thus situated should keep one or more breeding sows, at least enough to raise a sufficient number of pigs for his own use. Have them ready for the market at six or eight months.

These are the kind most generally wanted, and to supply the demand it is necessary to keep the animals thrifty and growing from the first, and to secure the most profitable results, it will be necessary to feeding care for them in the most approved manner. They must be kept warm and dry in cold weather and comfortable at all times. In winter this means good quarters and plenty of bedding. Where much milk or other liquid food is given it will be astonishing to see how soon the bedding will become saturated and require additions or change. This will require a large amount of material for the purpose, and it may seem to some that the manure thus made, containing so much of strawy material, would not be very valuable as a fertilizer, but experience proves that it is. The rations of the pigs should contain a proper amount of grain in addition to the skim milk if suitable growth and maturity are expected. Consequently this adds to the value of the manure made.

A common practice is to allow swine to work over the horse manure. Rightly managed, although it may contain much straw or coarse material used for bedding, it will become thoroughly worked over and come out the best of fertilizers. But there should be enough of this material to keep the pigs busy and still not become too wet or muddy. I have a small building adjoining the horse barn in which the

manure is put as rapidly as made. There is a separate apartment in which the pigs eat. This is a good arrangement for the purpose. At another log house there are small yards attached into which any coarse manure or refuse material can be put for the pigs to work over. I find that the manure made and worked over by the pigs adds very materially to the fertilizing resources of the farm, and the effects are becoming more and more apparent in better crops and improved condition of the soil.—NEW-ENG. HOMESTEAD.

**The Flock****SELECTING THE RAM**

As the time is come when the sheep-breeder is about to mate his ewes we presume he has or is taking great pains in securing a good sire suitable for his ewes. There are farmers and breeders who have to send to other breeders in order to get fresh blood into their stock. As we receive many orders from a distance, let me give a word of advice to those sending for rams, etc., so that the breeder may have a chance to please you. Last year we had one correspondent, after getting prices, writing as follows: "Enclosed please find cheque for ram lamb. We have a flock of very high grade Shrops. and wish to increase size." We sent him a compact, heavy boned and heavy bodied lamb with close, well-covered fleece. About a month ago he wrote me, saying he never had such lambs, and realized a high price for them from the butcher. I could relate many similar instances. Then we get many orders after this fashion: "Enclosed find ways send a good lamb, but if we knew cheque, please send good lamb." We at the particulars we might send a better ram for that particular flock. If a customer cannot describe minutely the kind of ram he wants he had better describe his flock and state what points he wishes to improve upon or keep prominent.



But I am off the subject I started to write about. No breeder can secure too good a ram for his flock, if the flock is worth having and whether he be a large or small breeder. "If two or three small breeders would join together and buy a real good ram it would be better than using a common one. (1) Having then secured a good a ram as can be procured, the breeder's particular attention should be turned towards his ewes and the pasture for them.

I will give our plan and if any person has a better one, please send it to "The Farming World" that we may all be benefited. I choose after haying the best timothy sod we have and keep it for our ewes at mating time. Then one week or ten days before we turn the ram with the ewes we turn the ewes into the pasture and begin to feed a few oats morning and evening. We generally have two fields and every three or four days change them from one to the other, giving salt and water at will. This year the pasture being good we feed 30 lbs. oats to 70 ewes morning and evening. Put the rams in over night, giving them what oats and a little bran they will eat up clean. If the pasture should be poor I would feed more oats: After the season is over we give the ewes as large a run as possible, feeding a few oats once a day.

Perhaps I have written enough for this time. If this finds a place in the columns of "The Farming World" instead of a place in the waste paper basket, I may give our methods of caring for ewes and lambs at and after lambing time at a future date.

J. H. JULL.

Mt. Vernon, Ont., Oct. 30, 1900.

#### **QUEER USES OF INDIAN CORN.**

At the Paris Exposition there is a little showcase wherein are displayed the more important Indian corn products of this country. This made an amazing display, including the following articles: Cornmeal, hominy, hulled corn, cream of maize,

granulated cornmeal, canned green corn, canned hulled corn, maizena, samp, degerminated samp, cream meal, self-raising pancake flour, quick malt, brewers' grits, husks for mattresses, cellulose for packing the coffer-dams of battleships, paper stock prepared from cornstalk, degerminated brewers' meal, Bourbon whisky, alcohol, bolted cornmeal, hulled cornmeal, feed of ground blades, stalks and cobs, varnish, cob pipes, corn lager beer, table sirup, popcorn, table grits, British gum, salves, laundry starch, table starch, frumentum, flaked hominy, gum paste, corn oil, vulcanized corn oil, oil cake, grape sugar, gluten feed, glucose, confectioners' crystal glucose and confectioners' paste.

Corn oil, vulcanized, forms the basis of a substitute for rubber. This substitute, compounded with 60 per cent commercial rubber, is used in rubber boots, linoleum, wheel tires, blankets and other articles. Crude corn oil has been used in the manufacture of toilet soap. Rectified, it is as clear as alcohol, and is the base of a substitute for olive oil. Cornstalk pith is of value in making paper, varnish, films, imitation silks and gun cotton and other explosives.

"New York World."

"What means this talk about giving up farms in consequence of the scarcity of labour?" writes a Correspondent. "Such a statement certainly does not apply to South Lincolnshire. I could take you to half-a-dozen large farmers who are requiring farms for their sons or sons-in-law, but who find the greatest difficulty in procuring them. If a farm is to let anywhere within a dozen miles of Spalding, there are usually a dozen, and frequently a score, competitors for the same. Equally anxious are some local agriculturists to purchase farms, and a desirable holding, anywhere between an acre and three hundred acres, is speedily 'snapped up'! This is a very different picture from that drawn by Mr. Sambrook." Yes, and fully confirms the sentiments we expressed in our last issue.