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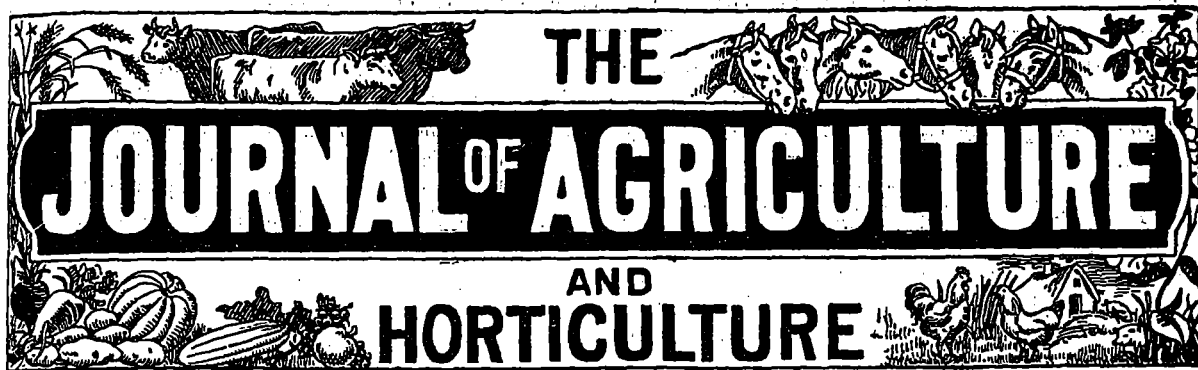
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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

VOL. 3. No. 5

This Journal replaces the former "Journal of Agriculture,
and is delivered free to all members of Farmers' Clubs.

SEPT. 1st, 1899

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Journal of Agriculture and Horticulture

THE JOURNAL OF AGRICULTURE AND HORTICULTURE is the official organ of the Council of Agriculture of the Province of Quebec. It is issued Bi-monthly and is designed to include not only in name, but in fact, anything concerned with Agriculture and Stock-Raising, Horticulture &c. All matters relating to the reading columns of the Journal must be addressed to Arthur R. Jenner Fust, Editor of the JOURNAL OF AGRICULTURE AND HORTICULTURE, 4 Lincoln Avenue, Montreal. For RATES of advertisements, etc., address the Publishers

LA PATRIE PUBLISHING CO.,

77, 79 & 81 St. James St., Montreal.

Subscription: \$1.00 per Annum payable in advance.

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Notes by the Way.

STE-ANNE DE BELLEVUE.

MR. REFORD'S FARM.

Any one who has "stopped off" at the G. T. R. station of Ste-Anne de Bellevue, one of the loveliest spots on the West-end of the Island of Montreal, must, if he have an eye for farm-crops have been mightily struck with the appearance of a piece of silage-corn, about 16 acres (18 arpents) in extent. Considering the general quality of the land in this district, the crop is marvellously fine; quite equal, in fact, to the great field, grown by the Messrs. Dawes, of Lachine, in 1889, after the hops that had been cultivated there, and continuously manured, for 20 years.

The corn was sown on a broken-up clover-lay, the second cut of the year having been ploughed in. Mr. BODEN, the manager of the farm, explained to us that, though he can easily conceive that, in many cases, our idea that ploughing in clover is an extravagant operation is correct, still that, in this district, vegetable matter is so much needed by the soil that he holds it to be better to utilise the second cut this way than to mow it for hay; particularly, considering the risk of the "catching" weather not infrequently encountered at the season when the second cut is ready. Mr. Boden, thus, finds it pay to inter that crop, and buy external food to take its place.

The farm contains about 324 acres (383 arpents), and is worked on a rotation of five members. Some few acres, at the Northern end of the farm, have not yet undergone the last touch of the improver's hand, but, with this exception, the entire farm may be said to be in a perfect state of cultivation.

ation, the crops being far better than this very peculiar summer left room for expecting to see. Indeed, except the oats, all the crops are very good.

The *root-crop* consists of 8 acres of swedes, 5 of mangle's, and 4, or so, of white carrots. Mr. Boden does not grow the "White Belgians," because, as he says, it grows so much out of the ground that it is liable to be broken in the pulling. We have always grown this sort ourselves, as it is an immense cropper, and if the workers will only pull the carrots *straipht* out of the ground there is not much danger of loss.

The *swedes* are a superb crop, though, in our opinion the drills are unnecessarily wide apart: not less than 30 inches, as are the mangels. Two feet intervals are quite enough in this climate for all sorts of roots and for potatoes too, except such as run to great length of haulm. We should like to have seen the drills pulled down more in the case of the swedes and mangels. In Scotland, owing to the superabundance of the rainfall—particularly on the West side of that country, (1)—we know that it is the custom to leave the drills intact, and even to earth them up, after the hoeing, by hand and horse, is finished; but, here, it is quite unnecessary. Pulling down the drills, in our opinion, increases the size of the roots, and, by exposing fresh surfaces to the air, helps the preparation of the, as yet, raw plant-food to serve the purpose for which it is intended.

The *stock* consists of a herd of 75 Ayrshires and 1 half-bred Jersey, and about 80 hogs; Yorkshires and Berkshires. The cows are a regular good practical sort, looking like abundant milkers, though, perhaps, the *pelvic arch* of some of them might not please our American friends! The list of prizes won by the herd, last year, is a very long one. (2) The pigs are a nice lot, evidently intended to serve for the bacon market. They get plenty of exercise and are now (August 9th) feeding off the *second-growth of rape*.

Fodder-crops.—A large extent of fodder-crops are grown on this farm. The lucerne (alfalfa) was being mown for the third time, and several

(1) Mr. Boden is from Ayrshire. Ed.

(2) Last year, 34 prizes, 17 of which were first prizes.

Ed.

acres are sown, at intervals of a fortnight, of a mixture of vetches, pease, and oats, at the rate of 12 pecks to the acre *10.2 pecks to the arpent*. We confess that, for the purpose of cutting for green-meat, when the vetches and pease are just in blossom, we should prefer a little heavier seeding.

The *buildings* are as nearly perfection as possible. Ventilation and light have been carefully studied, and the cowhouse must be a bright and lively place for cattle to pass the dull months of our long winter in. A 12-horse power steam-engine does all the work of food-preparation, including the *chaffing*, so to speak, of the maize to fill the 3 large siloes. All the milk goes to Montreal.

The roads and divisions are perfect, as far as they are finished; only a little bit of road-work remains undone: near the Ste-Marie road.

The general management of the estate is excellent, and it would be a good lesson for some of our farmer-friends in the more backward parts of the country to look carefully over this well cultivated estate, and to compare its appearance and crops with the appearance and crops of its neighbours on each side.

We forgot to say that Mr. Boden, like ourselves, thinks that it would pay very well to give a good dose of nitrate of soda to the mangel-crop, but that, at present prices here, it is out of the question. He uses a small dose of superphosphate to start the swedes. The rest of the manuring is done with farmyard dung.

A very pleasant afternoon was spent at Mr. Reford's farm, on August 23rd, when there were present Mr. Grisdale, agriculturist at the Ottawa Experiment-farm, Mr. A. G. Gilbert, poultry manager of the same establishment, and several other well known leaders of the agricultural class.

After dinner, a very agreeable *causerie* took place, in which a good deal of valuable information about practical farming was exchanged. The cattle, poultry, etc., were then inspected, and the party visited the root-crops, lucerne and maize fields, at all of which great satisfaction was manifested by the visitors.

We must congratulate Mr. Boden on the perfect success that attended this very pleasant meeting. (1)

(1) More in our next. Ed.

The Poultry-Yard.

POULTRY.

Better Poultry Wanted.—How it can be produced.—Rapid Flesh Formers.—Proper care and ration for chickens.—What are our farmers doing?

The season is now at hand when the farmer and poultry breeder who has hatched and reared out his chickens by mother-hen should pick out and pen up his chickens, in order to fatten them for market. The expert who is skilled in the artificial hatching and rearing of chickens by incubator and brooder, or brooder-house has long since marketed his early birds and reaped his harvest. Probably he has a second, or, third lot of his chickens to place on the market. But whether incubator, or hen-hatched, or artificially or naturally reared, results satisfactory to the breeder or purchaser cannot be attained without complying with certain conditions, viz.:

1. Handling the breeds which make large and rapid flesh formers for market.
2. The proper treatment of the chick from time of hatching until killed and dressed for market or shipment.
3. The penning up of the chickens for 3 or 4 weeks and properly fattening the same, previous to killing them.
4. Feeding the best flesh forming rations, in the most approved methods.

Rapid Flesh Formers.

It has been pointed out in the columns of this JOURNAL, many times during past years, that the best all round fowls for farmer, or breeder are Plymouth Rocks, Wyandottes and Brahmas. Why? Because they are good winter layers, and their progeny are rapid growers. Two important points. There are certainly prolific layers to be had in Leghorns, Minorcas, Andalusians and Hamburgs, but they are more of the egg machine type than the general purpose fowl. Taken at the proper age, White Leghorn chickens have been found to make an early but very small broiler. But the experience of many years goes to prove the first named breeds are the best to fill the dual requirements of winter eggs and early market fowls.

The proper treatment of the Chicks.

After leaving the nest the care of the chicken begins. It must be borne in mind that a chicken neglected in the first five weeks of its existence never afterwards completely recovers. In other words chickens that are allowed to pick up their own living, or allowed to be dragged about by the energetic hen-mother in her efforts to find food for them are more likely to develop bone, linen and muscle rather than the luscious flesh so desirable and only to be had in the properly fed and cared for chicken. The past numbers of the JOURNAL OF AGRICULTURE will furnish all directions as to how to feed and care for the chicks from nest to marketing time.

Penning up and fattening the chickens for market.

Experience has taught that it is wise to pen up the chicks either singly or in groups and feed regularly twice or thrice a day on such rations as are given further on. In the case of Plymouth Rocks or chickens of the other heavy breeds of 4, 5 or 5½ months of age, it may be only necessary to place them in an ordinary run where they may have a limited amount of exercise, but they must be regularly fed. I do not write now of the cramming of the chicks by machine, which is no doubt beneficial where poultry of indiscriminate age, size and sort are put into the single fattening pen. If Plymouth Rock, Wyandotte or Brahma chicks are bred and properly cared for from time of hatching, experiment has shown that no cramming machine is necessary to get a satisfactory amount of flesh and of a very superior quality. There can be no excuse for farmer or breeder not penning up his market chicks and giving them extra care and rations for two, three or four weeks before killing and dressing them for market. Results in better quality of flesh and price for the same will be his reward.

The best flesh-forming Rations.

The ordinary farmer will find that the waste of his house and farm can all be put to good account in fattening his chickens. A mash of finely ground oats, with the waste of his table and mixed with milk sweet, skimmed, or sour and fed three times a day to his penned up chicks, will be found a cheap and effective ration. He may add if so inclined, a part of ground barley or ground corn, but feed in the shape of mash for it has been

found more effective, in shorter time, than feeding whole grain. Another ration which was used last fall with great success in fattening 36 chickens, in our poultry department, was composed of

- Two parts finely ground oats ;
- One part ground barley ;
- One part cornmeal.

The whole was mixed with sweet milk. At the end of the second week beef suet in the proportion of one ounce to each group of 4 chickens was added to the ration and with good effect. The suet was cut up or rather chopped into very fine pieces. The milk was made hot before being used. In France, ground oats and cornmeal are sometimes the only constituents of the mash, and again, ground barley is preferred. In England, the favorite fattening ration, which is always fed with cramming machine, is ground oats, as fine as machine can grind them, with a small quantity of tallow. This latter ration is fed twice per diem, and in a semi-liquid condition. In all cases grit and water may be given. Milk in some shape is the favourite liquid wherewith to mix the mash.

Let a superior quality of Poultry be produced.

The above are a few points briefly given. On another occasion how to kill, pluck, dress and place on the market may be touched on. But our farmers must first produce the superior quality of poultry required and so much sought for by Montreal dealers. Just fancy, two leading poultry dealers in Montreal, telling me one after another, that they could not get from the farmers the superior quality of poultry required by their best customers ! And what more sure in result, or more easily raised than Plymouth Rock, Wyandotte and Brahma chickens. What is required is a little energy and enterprise on the part of our farmers. How can we expect to take advantage of the limit-less British market, if our farmers do not produce the superior quality required by our home markets ?

A. G. GILBERT.

Central Experimental Farm,
Ottawa, August 15th, 1899.

THE POOR MANS' FRIENDS.

The combination of poultry and small fruits as a profitable business is a subject upon which I have thought a good deal, and I do not now think of a combination or of anything that a poor

man with limited means who has the pluck and vis, and is willing to work, can take up as a pursuit with as small an amount of capital and grow with it into a good business as can a man who has a love for poultry and small fruits where he uses good business judgment and will make a study of the business.

The raising of poultry and small fruits are both very profitable and can be handled together without one interfering with the other. It has surprised me very often that there are not more in the business ; there are hundreds of men who are capable of making both a success, yet they will drudge along year after year, working for other people, either in offices or some manual labor, receiving of course sufficient to support their families, yet they never get ahead or can save up a copper for a rainy day. But if they would take the courage to start out into the poultry and small fruit business using the usual amount of good judgment and common sense they do in looking after their employers' business, they would make a success of their venture and be independent.

Every man should be worthy of his hire, but he should also look out and lay up something for a rainy day, but for lack of capital many men toil year after year, giving their employers' good service too, but all the time paying him for the privilege of working. A certain amount of what they create has to go to their employer ; is this not so ? just think of it for a moment. Do not drop your jobs now and rush into the poultry and small fruit business, but just think how pleasant it would be to owe five ten or twenty acres near some good town or city, a very little cottage, four or five hundred well bred chickens, five or ten acres of small fruits which if handled rightly the chickens and fruit ought to give a revenue of from \$500 to \$600 per year and perhaps more. I know of some parties making \$700 to \$1,500 a year, and as you grow up into the business you can make it produce even more than that you need not give up your situation at first, commence by getting a few of the best you can get ; do not expect to get the best for a nominal sum you cannot do it, you must not stop short of the best (which you will have to pay well for if you get them) then you will have a lever on the purchaser as he will want the best from you, \$10 birds do not grow in every yard, but you will find that every man really wanting to buy will want the best and as soon as it is known that you have the best, you

you will have established your market and your choice birds are for ready sale, you will find the lowest grade fowls will be the hardest to sell, that is just what men of experience know. I now quote from the words of one who has tried it and gives his advice as follows, having had fifteen years trial of it. He says :

Now while you are getting started with chickens, \$20 to \$50 will give you a start of the best ; then raise all you can during the summer. In the spring, rent if you do not own any a few acres of land for three to five years. Buy a few hundred or thousand strawberry plants and other small fruits (most all nurserymen give directions for planting) give them good care during the growing season ; during this time study your chosen business, get books and papers, papers are so cheap now, take several of each kind that treat on the subjects you wish to learn. Do not be penny wise and pound-foolish, but get these papers and study your business and by the time the year rolls around you will get some insight into your chosen vocation, and all the time you can be working for your employer and getting a start and learning your own business, then the next year you should begun to secure some revenue from your investment. Then if your means are sufficient you can paddle your own canoe, if you started liberally and well, if not you may still have to work. Another year to tide over but all the time keep planning and saving increasing your stock and by the second year, if you have no bad accidents you ought to care for yourself and be your own master.

Three years ago, I visited a gentleman living in a large town, near Boston, working in the city and employed as a bookkeeper, who began the poultry business by buying a worn out farm on credit on a mortgage for several years ; starting with only a few hundred dollars to put up small buildings he had been on it three years but had at the time I saw his place a brooder house of 250 feet in length, and four other houses for laying stock, getting a revenue large enough to maintain his family, keep three horses, five cows, selling his milk and eggs in the town and is now living in luxury and comfort, from the proceeds of his poultry alone, now being his own master in every sense of the word, having an interest in his old employers business.

S. J. ANDRES.

HOW TO PREPARE POULTRY FOR MARKET.

The preparation of poultry for market is very much neglected and causes more loss than any other one thing connected with the poultry industry. I have often watched and observed farmers coming to our markets with poultry during the holidays and have noticed the condition their poultry was in, and I beg to say that one half of the poultry they offered for sale was not fit for table use.

What was the result of this carelessness? He had to sell it very cheap in order to get rid of it, and that is what ruins the market. To place a lot of inferior stuff on the market in competition with good quality, of course, the good quality will always sell at a fair price, but how annoying to offer a good article at a fair price and have your customers tell you that they were offered poultry at half your price.

Restaurants, boarding houses and cheap hotels buy and place before their patrons poultry that is not fit for anything. Too old, poor and so tough that there is nothing to do but gnaw the skin from the bones. Do you wonder that people sometimes say they are tired of chicken? What is more disgusting than to sit down to a table and have the waiter to sing over the bill of fare, and you have ordered chicken, and, of course, you expect a toothsome morsel you can eat, but when your order is brought what is your surprise? If you have had enough of such bones to keep you picking for a couple of hours you would leave the table hungry. Now if such poultry could be kept off the market, it would increase the market demand one half.

There would be more poultry consumed. Do not follow up the plan to keep poultry after it is too old to be of use to you and then sell it for whatever you can get for it, sell it while it is fit for table use. Do not try to put something on a customer that you would not use yourself. This means hurting the business of selling poultry to the public. Do not try to sell poultry unless it is fat. If it is not in good condition you should not try to sell it. When you ship your poultry alive do not place too many in one coop to save charges and do not put in small and large birds together, but grade them according to size, color, and quality.

In dressing, grade them, putting all the culls in



one package by themselves, it will not pay you if you put six good ones and six bad ones in the same package, they will sell at the price the poorest quality would bring and you lose half the price of the good ones by selling them with the inferior ones. You may think this a queer argument, but ask people who have been shipping to commission men or the city dealers who buy from commission men. They will tell you it is only too true. Now this can all be remedied and we must do it. Perhaps you will ask, how can it be done?

I answer, simply by each farmer doing his own individual best part and using his influence among his neighbors. No difference where you sell to commission men, private families, store keepers or hucksters, put your poultry in condition before you offer it for sale, keep it up year after year, and soon your poultry will have a name that will sell it to your customers for a good price and that is the only way to get a trade and establish a name for your business, that will bring in money in the long run and advance and help the poultry industry and put it in the condition it ought to be all over the country in cities or towns, not only in this Province but the whole Dominion of Canada. If our farmers or every one else who sells poultry or raises it for the large markets, would put it in good condition before presenting it for sale, cull close, and separate the different grades and throw away that which cannot be fit for eating, in five years Canadian poultry would have a name that could not be beaten and the demand could not be supplied. The raiser would make a great gain financially and morally as well. He would gain financially by producing a better quality of poultry by putting it in better condition for market, also getting a better price for it for the reason that the market is not being overstocked with inferior goods. He would gain morally by selling to others only what he would use himself, carrying out the Golden Rule of doing to them only what he would they should do into them.

S. J. ANDRES.

WHAT CAN A BREEDER AFFORD TO SELL?

This is quite an important question. On general principles he should keep the best for his own use. No flock can be kept up to the proper standing and reputation of the breeder unless his best

specimens are retained for his own use. The choicest pullets, as to size, markings and general points should be selected and kept separate. This is a wise precaution to take, and will prevent the danger of disposing of such a mistake. As to cockerels, the same course should be pursued, unless he is in the habit of introducing new blood each year. The demand will naturally be strong for his best, and the temptation to sell hard to resist. Of course, price has something to do with the sales even of his best specimens, and if he can obtain this to his entire satisfaction, he is at liberty to dispose of a certain proportion. How this price can be regulated is in the hands of the breeder alone. What value he may place on such birds, remains to be decided in his own mind, I do not consider that the purchaser has any right to dictate as to this price. It should not be based on any market quotation, for there cannot be any legitimate standard price for such birds. If the breeder is one of real prominence, the purchaser should consider himself fortunate if he can persuade him to dispose of some of his best birds even at a high figure. It must be thoroughly understood, however, that the purchasers in such cases are, as a rule, traders of prominence themselves, who are perfectly aware of the value of the best blood, and of the best specimens of such blood.

I have known of very high prices being paid for breeders, that is birds that are to be used exclusively for breeding purposes; for example, a pen of one cockerel and three yearling hens of Barred Plymouth Rocks for \$75. For the average farmer or amateur of moderate means, this would probably seem a pretty big price, but to a first class fancier who know what he wanted and could value the birds by personal selection, the price is a fair one, and barring accidents, would prove to be a paying investment. Price, for males and females, however, average much lower than this when demanded for breeding purposes.

From five to ten dollars each is about right if the quality of the stock is taken into consideration.

Purchasers who are willing to pay one or two dollars for either sex can expect to obtain only good strong healthy specimens with no particular markings, in fact hardly better than the calls of a good flock. These are not to be despised, as they frequently turn out quite as profitable for the use for which they were intended, as the higher priced fowls. With regard to exhibition specimens, the price may go still higher, and ye

it does not necessarily follow that all show specimens, are high priced. Frequently a cheap bird wins but it is matter of good luck rather than the discretion, (?) and nine times of of ten the chances are in favor of the more expensive articles.

Which specimens a trader can afford to sell depends entirely on the price. If he can make more by selling his best than by keeping them, he naturally sells. He can always afford to sell his surplus culls or his discarded breeders. A certain proportion of one's entire stock must be sold each year to make room for the young chicks. To purchasers who are looking for stock, it is good advice to suggest that they buy early, and thus obtain the best of the flock, instead of waiting until later, after many orders have been filled and the poorest specimens are left to choose from.

"First come first served" is the rule and if it were more strictly adhered to fewer complaints would be heard of poor investments.

S. J. ANDRES.

The Farm.

ON FORAGE-CROPS.

(BY THE EDITOR.)

(Concluded).

We now come to the *Hungarian Grass*, and a most useful grass it is; rapid in growth, wonderfully easy to sow, sure to take, if the land is decently prepared; greedily eaten by all sorts of stock, if cut whilst young; and the best butter producer of all the forage crops grown. Unfortunately, most people who have tried it will let it stand too long. It has only one defect, as far as we know; it won't bear frost; so that, by about the middle of October, it should be all consumed. The land, after the Autumn ploughing, should be re-ploughed in the Spring, harrowed till fine, and rolled after the seed is sown. It will take about 28 lbs. to the acre; with that quantity, hardly a weed can show its face. Two sowings should be made, at an interval of 3 weeks, to have it come in fresh and fresh.

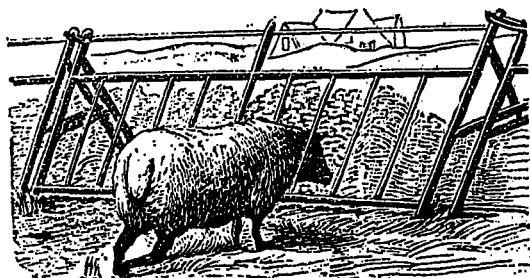
The time will soon arrive, when we shall no longer see the sheep lying under the fences, and depositing their invaluable manure, to say nothing of the oily exudations from their fleecy coats, on

the grassy borders of the arable lands out of the plough's reach. To the system of folding off green crops all the Summer, as well as all the Winter, the, formerly, poor lands of the East and South of England owe their present fertility. Here, the end of October must, as a general rule, see the flock in the yards; but it is my firm conviction that Canada never will produce the full amount of grain which it is capable of producing, until the sheep is made, what it is in England, the dung-carrier of the farm. On the sandy soils of Bedfordshire, as well as on the chalky clays of Kent, towards the beginning of July, the traveller sees, as he jorneys along the roads, large fields of a rich, green plant, something like a tall cabbage stalk, with leaves growing all the way up it, and from 3 to 3½ feet high. This is *Rape*, or *Colseed*, the *Colza* of the French. The latter, distinguished from the former by the roughness of the leaves (hispid), is supposed to be, and, perhaps, is, the more fattening of the two; but they will both make sheep *ripe fat*, without any other food. Cows are fond of it, and it makes them give plenty of rich milk, but great care must be taken that it is not given to them with the dew on, or in rainy weather. Insects don't trouble it; as it is sown broadcast it requires no hoeing; and no weed can struggle against it. It is grateful for manure, but on good soils, of a moderately heavy quality, it can do without it. A few, say 10 bushels of bones, mixed with as many bushels of ashes, lixiviated if no others can be spared, will, on light soils, produce a crop so luxuriant in its lush abundance, that no one can fail to appreciate it. If it is desired that the Ewes should bring forth twin lambs in the Spring, a fortnight, or three weeks of feeding on Rape, before the Ram is put to them, will have the wished for effect. We remember, in 1853, our Ewes, 260 in number, lambed down 397 lambs. Of 15 that lambed one night, there were 29 lambs born! They were "Hampshire Downs." (1) a breed not much given to twin, but they had lived upon rape for 3 weeks in the previous September. The plant grows so high, and is so thick on the ground, that the sheep don't trample it down, as they do clover; for which reason they may be allowed to feed on it at liberty; though of course, the more economical

(1) "The Oxford," that led in the sheep-classes in Omaha, last month, are a cross between the *Costwools* and the *Hampshire-downs*. It is to the latter that they owe their dark face. Bruce, of Eynsham, Oxfordshire originated the breed. Ed.

plan would be to divide a small piece off, every two days, or so. We submit a sketch of the newest kind of *Hurdle*; it is usually made of iron, but we have used some of wood, which answered perfectly. It will be easily seen that a boy can move them backwards, or forwards, without difficulty. If sheep are given to jumping, it would be a good plan to leave one of the upright bars of each hurdle 18 inches higher than in the sketch; if a wire is then run along the tops of the bars, loosely will do, the sheep may try to jump at first; but, after a few attempts, the shock they receive on falling back from their spring will so astonish their weak nerves, that they will become disinclined to further adventures. It is in this way alone, that the Welsh Mountain sheep, the wildest domestic animals in Creation, can be kept within bounds. The fresh piece should always be given in the afternoon, say about 2 o'clock, when the sheep will have their bellies pretty full, and the evening dews have not begun to fall.

The land should be as carefully prepared for Rape as for Mangolds, or Swedes. A cross-ploughing, in the Spring, followed by the harrows, the roller and the cultivator, or grubber, if there is one handy, should leave the land in a fine tilth by the middle, or end of May. From 6 lbs. to 8 lbs. of seed per acre can be either harrowed in,



with light harrows, or with a bush; or, if the soil be a little cloddy, a roller may be used; but so early in the season I should prefer to leave a harrowed surface, to a rolled surface, as being less likely to suffer consolidation and, consequently, hardening on the top, from heavy rains followed by a hot sun; unless, as in the case of tares &c., where a scythe has to be subsequently used, and even then I should rather roll after the crop is up.

When the hurry of harvest is over, choose a piece of land, in good condition, either in stubble, or where the first crop of tares has grown, and, having ploughed it, and made it decently fine,

scatter over it 3 lbs. of rapeseed and 10 lbs. of Hungarian grass seed to the acre, and harrow it in. It will be ready to feed by the beginning of October, and will be of the greatest possible use for the following purpose.

We suppose every body knows that meadows in which timothy grass grows should never be fed at all. Owing to its, so to speak, bulbous habit of growth, the roots are easily extracted, and the injury done can never be repaired: consequently, towards the autumn, the cattle, being restricted to the pastures, which by that time are, except in very wet seasons, pretty bare, retire into winter quarter in by no means a proper condition to bear the, necessarily, hard fare they may expect there. The steers and heifers lose flesh; the cows fall off in their milk just when butter sells, in our towns, at a good price, and the poor animals never, during the whole season, recover from the check, but go out to grass the following spring with the double duty of repairing the waste of flesh and fat, and of yielding milk at the same time, imposed upon them.

Now this slight trouble of sowing a mixture of Rape and Hungarian grass over two, or more acres, according to the size of the farm, would remedy this misfortune. The grass may be touched by the frost, but the cows will eat it and the rape together, and the dryness of the one will modify the moistness of the other; tho' there is no danger to be feared if the animals have a little straw to eat before they are turned out after milking. We can answer for it, that the flavour and colour of the butter will be all that can be desired; in fact, no one could tell any difference between it and grass-fed butter. Pray don't fancy, that the cows will scour. Rape is a very much sounder food than turnip tops, and never produces diarrhoea.

Should you wish to grow your own rapeseed, a hundred or two of the *roots* might be stowed away in the cellar, or root house, and planted out in the spring—it yields largely, but, unfortunately, birds are very fond of it, which militates against its ripening. The price is very low, about 12 cents a pound, so it hardly worth the trouble of growing. The refuse of the seed, after the oil-crushers have done with it, is used for fattening, and for manure, under the name of rape-cake. When best linseed-cake is worth £10.00 a ton (in England) rape cake sells for £6.5 to £6.10. It is rather bitter, and the animals will never eat

much of it, 3 lbs. to 4 lbs. a day, at most; whereas they will devour 9 lbs. or 10 lbs., of linseed-cake, and make no fuss about it. As manure, rape-cake used to be employed largely, in the East of England, for wheat. Highly nitrogenous, it was the best substitute for dung before Guano was imported.

Having now cursorily, gone over the list of forage crops which I mentioned at the beginning of this paper, it would be as well to speak, shortly, of the manures best suited to the different plants I have been describing. And, not to plunge too deeply into botanical distinctions, they may be divided into two classes; the grasses, and the pod-bearing plants. Of the former we have talked of rye and hungarian grass; of the latter we have mentioned Lucerne, clover, tares and rape. Now it is pretty safe to aver that the specific manurial substance for the former is nitrogen, and, for the latter, phosphoric acid. Of course ootash is of benefit to both classes, but there really are so many ways in which any amount of ashes might be collected on the great majority of our farms, at a very small cost of labour, that it is hardly worth mentioning. Moreover, wherever a fair amount of stock is kept, the quantity of potash in the manure made is very large, still, if one could find, here in Canada, a deposit of Kainit, or mineral potash, it would be very serviceable.

As to Sulphuric Acid, it is cheap enough, and plentiful enough, in fact it is constantly used all over the country under the form of "Plaster," which is, simply, a combination of Sulphuric Acid and Lime.

Nitrogenous manures are quite another thing. It, nitrogen, is the grand desideratum, to the farmer, of the present day. It is very scarce, and, consequently, very dear. Guano is too high-priced to be used with profit, so is Nitrate of Soda. The refuse skins, ears &c. of the Tanneries contain a considerable proportion of Nitrate of Lime when rotted, but the quantity to be had is very small. We, on our farms, waste it every day, by neglecting to preserve the urine of our animals. Can't we be persuaded that it is, really and practically, the most powerful manure to be found? Put a drop of Spirits of Hartshorn into a tablespoonful of water and give it to any small flower in a pot; see, after a few doses, how the whole look of the plant is changed! It is only Nitrogen, after all, that has done it, Spirits of Hartshorn being dilute Ammonia which, in its turn is composed of

Nitrogen and Hydrogen. As for the mineral Superphosphate *alone*, it is, except for Swedes, Turnips &c., perfectly useless: combined with Ammonia, however, it forms a most valuable manure, as Messrs. Lawes and Gilbert have proved, in their report to the Royal Agricultural Society of England of their painstaking experiments at Rothamsted.

There is plenty of saw-dust to be had near most farms, and no better absorbent can be found for the urine. Of course, liquid manure tanks are out of the question, but nine tenths of the urine might be saved by such a material as we have just mentioned being used. Labour is low now; England is anxious for all the supplies of meat, cheese and butter we can send her, and this is the time to make preparations for a more extended trade in those articles. But, to succeed, there must be active exertion; perhaps, truth to tell, even our Eastern Townships people are accustomed to take things a little coolly; the world is rushing on at a terrible pace, and, if we don't take care, we shall be left behind. A shade more anxiety to take advantage of the fine weather in Spring might not be unbecoming. There is not, *indeed* "plenty of time."

CANADA FIELD PEAS.

Peas are one of the foremost and most valuable crops that can be grown on the farm, and I must say the most neglected by the farmer. Perhaps no other grain crop except corn can be appropriated to so great a variety of profitable uses.

The grain is a healthful food, and rich in protein, and has a high feeding value. The straw contains valuable nutrimental material when properly cured, and is more relished by live stock than the straw of wheat, barley, rye or oats.

Peas can be successfully grown north of latitude 42°. Ohio, Indiana, Illinois and southward the temperatures are too warm to insure a full crop of grain, but generally produces abundance of straw, which can be put to a profitable crop, peas are excelled only by clover.

As a pasture for dairy cows, sheep and swine it is invaluable, especially when grown in conjunction with oats or barley, forming a combination of food and advantages, a summer pasture, rich in nutritious food, ready soon as the spring grasses begin to wither and fail. The pasture may be eaten down three or four times successfully during the

summer, with a proper interval between the seasons of pasturing. In growing peas for fodder, a large yield of grain and straw can be obtained by a mixture of other grains sown in conjunction, resulting in greater advantages than when grown singly; the fodder can be fed directly to the live stock, avoiding the labor and expense of threshing and grinding the grain. In harvesting the crop great care should be exercised in the curing process.

Pea fodder is very easily injured by rain falling upon it while it is curing, it becomes bleached and loses much of its nourishment and palatable taste. Pea straw, properly cured, will be relished readily, but when allowed to get dead ripe, stock will eat sparingly of it, unless forced to do so by starvation. Hence it should be harvested just before reaching maturity.

The agriculturist in the Province of Ontario places great reliance in peas for a most important crop. From 15,000,000 to 20,000,000 bushels are raised annually; the greater portion of the crop is fed to live stock. Much of the success which Canadian farmers have obtained in preparing cattle and hogs for the market has arisen from the liberal use of peas in the food rations.

Peas are perhaps unexcelled for fattening cattle during the first half of the finishing period, but toward the close corn could be fed with greater advantage. Peas fed along with wheat bran or ground with oats or barley, equal parts by weight, furnish a healthful food for milch cows. Peas are beneficial for building up dairy cows for milk production, sustaining them in fine condition. Peas are superior when fed to swine as a sole grain food during the fattening process. Peas ground with oats or mixed with wheat bran or shorts, make an excellent food for brood sows during the nursing period; also a superior food for young swine, promoting growth very rapidly. Peas mixed with oats of equal parts, from a good food for ewes in milk, for the same reasons that have been given for their use to cows and brood sows. They are especially valuable for developing lambs for early market. Peas supply an excellent food for poultry, and will greatly increase the egg production.

Public attention has been rudely awakened to the necessity of doing something to prevent the rapid exhaustion of the soil. That so valuable a soiling crop as peas should not have received more attention is indeed surprising. Like all leguminous crops, peas have the faculty of extracting nitrogen from the air and depositing it in the soil for the

benefit of other crops which follow. There are many practical points connected with this matter which must be of great interest to the farmer.

As a rule, farming operations are carried on for profit and not for pleasure. The rich man who farms for pleasure can easily afford expenses in the way of fertilizers which the practical farmer must necessarily avoid.

Winter wheat or rye should follow immediately after peas. By occupying the land with a growing crop, the losses of fertility are reduced to a minimum. Peas should be extensively grown for the value of the grain and for soiling purposes.

Vast areas of land in our favored country are well adapted to the growing of peas; as a consequence this source would add millions of dollars to the farmers' profit.

The value of this crop is too little known to the average farmer. Each year develops more intelligent interest and inquiry in its production. The difficulty in procuring pea seed, and the means to render easy the harvesting of the crop, have been the greatest obstacles in pea culture.

Pea harvesters have now superseded the scythe, and the seed problem can be easily overcome; one bushel of good seed procured and sown with care will produce about ten bushels of seed. With this amount of seed the farmer can commence operations at once. Soils containing 12 to 15 per cent of clay are best adapted to the growing of peas, but successful crops can be raised on a variety of soils. Since the pea is a hardy and vigorous grower, the land can be plowed in the autumn to great advantage and the peas sown early in the spring soon as the land is in suitable condition to be harrowed.

In sowing peas, a grain drill is preferable; peas should be buried to a depth from two inches on stiff clay to four inches on lighter soils.

When peas are sown broadcast and covered with the harrow only, and rain following, much of the seed will be exposed, hence use the grain drill.

The quantity of the seed to be sown depends largely on the character of the soil, and size of the pea. Rich and moist soils do not require as much seed as where the opposite condition prevails. The quantities to sow per acre will vary from two to three and a half bushels. (1) The amount of seed should increase with size of the pea.

(1) The first time we have seen a fair quantity of seed advocated in any paper on this side. It is the same with beans—not half enough seed is sown. Ed.

The term Canada field peas, as spoken of by the average farmer, signifies a lack of knowledge of the many varieties raised. The most suitable varieties of peas to sow will depend somewhat on the soil and climate, also for what purpose they are intended. White Wonder, Prussian Blue, Canadian Beauty and Lace White Marrowfat are great yielders. The best way to determine which kinds are the best suited to the varied conditions would be to sow a small plat of each of the several varieties. The Fall White Marrowfat is a good pea for soiling or for grain, and succeeds well under most all conditions.

Peas as a green manure are valuable; the most impoverished soil can be quickly renovated by plowing under a pea crop, preceded by winter rye. The rye should be sown in the autumn and plowed under in the spring when the heads begin to appear; peas should follow immediately, and in turn be plowed under. Ground thus treated would be fertilized in one season, and the mechanical texture would be improved.—*Practical Farmer.*

GOOD RESULTS FROM THE PLOUGHING UNDER OF GREEN CLOVER.

To the Editor of FARMING :

Among the many things of interest seen by the large number of farmers who have visited the Central Experimental Farm at Ottawa during the past few weeks, none have awaked greater surprise than the striking illustrations made this season showing the advantage to crops of the ploughing under of green clover. This is particularly seen in a field of oats of about ten acres. This land in its preparation in the spring was treated the same throughout; the field was all sown the same day with one variety of oats, the Bavarian. Last autumn about eight acres of this field had a good mat of red clover turned under, which was grown from seed sown (10 lbs. per acre) with a barley crop in the spring. One acre was ploughed which had been in Brome grass for two years. One acre, which had been occupied with other pastures for a similar period; and one acre with a mixture of pasture grasses and clover.

Over the whole area where the clover was turned under the increase in the growth of the oat crop is most striking. The difference in the highest part of the grain will average about twenty inches, and the deep green color of the leaves on this part of the field and the vigor of the plants are in strik-

ing contrast to the crop on the adjoining land where there was no clover. This remarkable increase in growth, affords convincing proof of the added fertility given to the land by the ploughing under of green clover. In another field, which has been planted with potatoes, a strip of the land covering eight rows of this crops had clover grown on it last year, which was ploughed under. In that strip the growth of the potatoes, as compared with the same variety on the adjoining land where there had been no clover, was quite remarkable, the plants being much larger and more vigorous. The results of the crops in both those instances will be watched with interest.

Last year a like illustration was given on eight plots of lands on another part of the farm, on four of which red clover had been sown with grain in the spring of 1897; while on the other four grain was sown without clover. This land was all ploughed in the autumn of 1897 and in the spring of 1898 the whole area was sown with Banner oats. The greater vigor in the growth of the grain where the clover had been turned under was very noticeable quite early in the season and it came more striking as growth advanced. These results were brought under the notice of a large number of visiting farmers during the season of 1898. When this crop matured the grain on these eight plots was harvested and threshed separately and the yield per acre on the four plots on which the clover had been grown exceeded that obtained from the plots on which there was no clover by an average of eleven bushels and one pound per acre.

In another field clover was similarly sown, in 1897, in different quantities with grain on a series of plots with three left as check plots without clover. As these were all to be planted with Indian corn they were not ploughed until May 23rd, 1898, by which time the clover had made a heavy growth. After ploughing and harrowing the corn was planted, and when harvested in the autumn the average crop on all the plots on which not less than eight pounds of red clover had been sown and ploughed under exceeded in weight the average yield of the three check plots on which there was no clover, by four tons two hundred and thirty-three pounds per acre.

WM. SAUNDERS,
Director Experimental Farms.

Ottawa, Ont., July 29, 1899.

A SUCCESSFUL ALFALFA GROWER

Growing alfalfa has received more attention in the Western States than any other part of the Union. The Kansas Department of Agriculture has given special attention to this subject, and has recently issued a press bulletin giving the experience of a large alfalfa grower of Nebraska, who has 2,800 acres sown to this wonderful clover. His experience is condensed as follows ;

PREPARING THE SOIL.

Our land is invariably plowed in the fall, in such a manner as to leave no back or dead furrows, and as deeply as possible, using a subsoiler on all land, the surface of which is more than fifteen feet above the sheet-water that, I am told, underlies the greater portion of Nebraska. The land is left in furrow until all the frost is out of it in the spring. We then go on to it (sometimes as early as February) with a float—an implement made of oak plank. Mine is sixteen feet long. With this we thoroughly crush and level the ground, and follow immediately with a disk harrow, going over the land as many be necessary to perfectly pulverize it, with the wheels set straight in order to pack the soil as much as possible. I am so particular about the preparation of the soil that in some instances the land is disked five times. After disking, the land is dragged thoroughly, using four horses on a twenty-foot harrow at least once a week on the average or after each rainstorm. This is done to prevent evaporation of the moisture which is so necessary to the growth of all vegetation, and especially this plant.

SEED PER ACRE.

Based upon the result of many tests, I invariably use twenty pounds of seed to the acre, sowing with a Cahoon seeder, ten pounds each way ; that is, ten pounds to the acre is sown crossing the field in one direction, then reseeding the same land with ten pounds to the acre, crossing the field at right angles to the first sowing. I never sow oats or other grain with the alfalfa seed now, as my experience has been that the alfalfa plant requires all the moisture available in this section, and cannot afford to share this very necessary requisite to its growth with any nurse crop. The seeding is completed between April 10th and May 15th. As experiments I have seeded every month in the year, and found that the best results followed early

seeding, as the young plants then receive the benefits of the spring rains.

About the middle of June, or sooner, if the weeds are large enough to shade the ground (with us the sunflower and redroot are quite rank by that time), I mow the land, leaving the weeds to dry where they fall, as they make a very fine mulch for the alfalfa. In four and six weeks more, according to the growth of the weeds, I mow again, leaving the weeds on the ground as before. This has given me in two instances a crop of alfalfa in September of the year of seeding, although generally I have got no hay crop until the second year.

My first seeding was in alternate strips of eighty acres, one strip with one bushels of oats to the acre and the next strip without the oats. The stand on the strips sown without the oats is to day more than twice as heavy as on those sown with oats. Two or three times since I have seeded small areas with oats, and once with barley, only to find the same result.

BLUE GRASS WITH ALFALFA

Hereafter, when the alfalfa is old enough so its roots are relying for their support entirely upon the soil below that which the blue-grass roots will penetrate, I intend sowing blue grass upon all my alfalfa fields, as this will do away with the danger of bloat that has heretofore existed in pasturing alfalfa, having observed that the cattle eat liberally of the blue-grass before eating any of the alfalfa, which prevents them from consuming sufficient of the latter to injure themselves. Also, when there is a wet spring and a heavy crop of blue-grass, we invariably get a much finer quality of hay than when we have alfalfa alone.

CUTTING AND CURING.

My experience is that it should be cut as near as possible when in full bloom. Having so large an area, this necessitates cutting a portion of mine before it commences to bloom at all. No cutting is done in the morning until the dew is off, that the alfalfa may fall upon well-warmed ground. The men are employed before that time in cultivating other crops. As soon as the hay is thoroughly wilted it is raked into small windrows, from which it is gathered, later by buck-rakes into stacks. As a rule, there are three men on the stack, four men on the buck-rakes, one man to attend the stacker, and a boy to guide the team used with the stacker. There is a large loss o

leaves attending this process, and had I a small area the hay would be gathered as I was taught to cure red clover in New England, by cocking it and letting it cure in the cock, after which it was immediately hauled to the barn that it might not get wet. As it is, what hay will be necessary for the dairy cows and breeding ewes, and perhaps for all of my ruminating animals will hereafter be cured in the cock, as I am certain that the additional expense will be more than compensated by the increased value of the hay. While there is no more valuable forage for cattle, cheep, colts, or hogs than well-cured alfalfa, so also there is no hay which can receive greater damage from wetting. Because of this I will hereafter put as much as possible in barns and sheds. I will put the remainder in stacks, which I shall protect with stack covers, which are now manufactured for that purpose.

In regard to the feeding value, there is one thing it may be well for me to tell you, particularly as it is generally understood that alfalfa makes poor horse feed, and so it does for driving horses. In July, 1894, finding myself without old hay or grain, and no corn to be had for less than sixty cents per bushel, I was compelled to depend entirely upon new alfalfa hay to feed some eighty work horses for more than thirty days, during which time they were worked unusually hard, as I was trying to subdue a swamp which was, in many places, very difficult to plow. During this time the horses were maintained in their usual condition of health and flesh, although I believe it better practice to feed some grain, in connection with the alfalfa, to all horses when hard worked. Since that time I have fed all horses on well-cured alfalfa, choosing for this purpose cuttings when the plant was passing out of bloom, having learned that there was more protein in alfalfa cut late.

I urge the importance of great care in procuring seed, as otherwise considerable trouble may ensue.
—*Farming.*

The Horse.

CARING FOR THE FOAL

The breeding of a mare to a stallion does not complete the task of raising a horse. It is useless, says the *Western Horseman*, to breed a mare unless she is to have proper treatment immediately fol-

lowing; it is useless to go to the trouble of getting a mare in foal unless you are going to look after the foal after it is foaled. Probably the most critical period of the whole oederation is during the first few days of a foal's life, and hence this is the period at which most care should be exercised. Mare foals die before they are ten days old than die between that period and maturity, and the greater per cent, of such loss is due to lack of proper care and attention. But few persons are so uninformed on the subject as not to expect children to have trouble in "teething," but it is remarkable how few ever give a thought even to the subjects of colts "teething," and yet it is safe to say that more colts die very young from troubles attending "teething" than from most all other causes. Colts, as a rule, can make no satisfactory headway at sucking until their teeth are through, and following this imperfection come irregularities of the bowels, deranged digestion, weakness and death. A very little attention following the dropping of a foal—the sooner the better—will usually suffice to avoid all trouble arising from teething. The only thing necessary is to remove the more or less resisting gum covering from the teeth, and simple as this operation is, it is often poorly and ineffectually done. "Cutting the gum," as ordinarily thought of and done, is a fraud and delusion—that is, cutting straight down to the teeth with a sharp knife. Unless the gums are found very tough and resisting, a finger nail is the finest and most practical gum-cutting instrument in existence; simply get the finger in the youngster's mouth and rasp the offending gum away by repeated scratches with the nail the broad way of the teeth are left bare. Should the gum prove too resisting for the finger nail, take a knife not necessarily sharp, or any other clean instrument possessing something of an edge, and scrape first one way then the other, broad way of the teeth, and in a few seconds the operation is all over and the colt is ready for real business. Do not neglect this matter for several days and until colt is probably past saving, but do it within a few hours after it is foaled. Another important thing: do not change the diet of the dam for some days after foaling, as a change of diet changes the milk, subjecting the foal to the dangers of indigestion and a consequent derangement of the stomach and bowels. Besides these, various other little attention to a foal during its early existence aid wonderfully in its growth and usefulness. All foals should be hand-

led and made to feel that man is their friend and protector ; their feet should be looked after and kept even and level. Indeed, it is the little attentions during their early life that add most to the probable future usefulness and value of foals.

AGRICULTURAL MEETING AT ST-HYACINTHE.

M. Castel, the Secretary of the Dairymen's Association, spoke of the pressing necessity of teaching agriculture in schools. An abstract given in the *JOURNAL D'AGRICULTURE*, runs, after translation, as follows :

"It is not without a certain degree of apprehension that I have assumed the onerous task of broaching the important subject of the teaching of agriculture in this province.

"Of broaching, do you ask? The question is no novelty ! I know it is not, since, hardly had I arrived here, than I was convinced of its necessity on the very benches of one of your Agricultural Colleges. This was ten years ago, and to judge by a debate in the last session of the legislature, the question had not even then received a satisfactory solution.

"While inciting me to continue my studies, this recent debate made me anxious to lay their results before the eyes of the vast agricultural population, for, strange as it may seem, the debate was only published in one or two of the daily papers. Can it be true, then, that public opinion is indifferent a question of such vital importance to the future of our agriculture? If so, the more urgent it is to arouse that opinion, and that is what I am about to try to do.

"In order to prove the absolute need of this education, let us compare cursorily the situation of farming in 1858 with its present situation ; not so much for the purpose of proving, for the hundredth time, the common place assertion that things have greatly changed during the interval, as to ascertain whether or no we have benefited by the improvements realised during that period ; if we have profited by the improved methods of farming, by the modern implements of husbandry and the novel openings of trade ; and, lastly, if we have found means to dispose, with profit, of our products in our new markets, and in what measure we have benefited by the progressive movement that has taken place in the last 40 years, which period represents at most the duration of an agricultural career, many of you having

already embarked in farming as long ago as 1858.

"During the course of the transformations in farming, has it ever occurred to you to ask how much time, how much money it costs to produce a bushel of wheat, of potatoes, or of pease? A statistician of the United States, Mr. Holmes, has compared the expenditure of time in '58 required to harvest and thresh a bushel of wheat, and finds that came to 160 minutes. In those days, sickles and flails were used ; now, reapers, self-binders, and steam threshing machines are used, and it takes 4 minutes !

"Years ago, the complete preparation of a bushel of wheat for market took 3 hours ; now, the work is done in 10 minutes ; and the same thing is the rule throughout all the operations of the farm.

"In 1858, the labour expended in producing a bushel of wheat cost 12½ cts. ; now, 8¼. During the intervening time we have seen the cost of labour diminished by 2 to 5 cents for wheat, from 3 to 4 cents for oats, from 6 cents to 2¾ cents for potatoes.

"This lowering of cost has been caused by the employment of improved implements ; but it is not everything to use improved implements, we must know how to select the best suited to our purpose, if they are to be in reality a source of economy.

"In order to get the best implements in the easiest manner, would it not be as well to purchase them in association with some of our neighbours?"

The lecturer then showed that, in 1858, our surplus agricultural products exported amounted in value to only \$7,000,000 !

M. Castel then submitted the following resolutions to the meeting, which were carried by acclamation :

1. That our reverend agricultural missionaries continue their patriotic labours with the same devotion they have always displayed, and press the necessity of agricultural education upon every one in every part they visit ;

2. That the Hon. the Minister of Agriculture at Ottawa, and the Hon. the Commissioner of Agriculture at Quebec, be requested to take, either conjointly or each in his proper sphere, proper measures to ensure, among the present and rising generations of farmers the diffusion, by the most rapid and efficacious methods, of the technical, theoretical and practical branches of knowledge connected with their profession.

3. That, with a view to prepare the public mind for the adoption of legislative measures needed for the regular organization of agricultural teaching in this country, the newspapers of every shade of opinion grant sufficient space in their columns for the full treatment of the question of agricultural instruction, and make it a point of honour to keep the subject perfectly free from all questions of politics."

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

ABOUT THE FASHIONS

It is seldom one comes across such a very pretty and simple costume as the one called, the Water-Lily. It is made of "butchers blue" pique and the best of it is that it is suitable to any age, always provided the colour chosen will suit the wearer.

It looks well made in duck, drill, or linen, also in blue, or cream serge, and by its simplicity is suitable to almost any age.

The Water-lily, has a dear little coat fastened with mother o'pearl buttons and is machine stitched with white.

The skirt is quite plain, turned up at the bottom, and finished with many rows of white stitching.

It has a shirt-waist of soft white washing silk.

A blue waist-band, and a soft blue stock, with a white sailor's hat with a blue band, finishes off this very pretty and inexpensive costume.

When choosing a blouse material, stout people should avoid plaids, checks and stripes across.

Slight figures can wear all these, and many others, and still look slim.

Shirt-waists are quite unsuitable to any but the slimmest girls.

The high white starched collar is doomed to oblivion; it is said to have ruined the necks of many girls, and they are very unbecoming to middle-aged women.

The soft, silk, sailor stock-tie, with a bit of lace is just now very popular and is most becoming.

We can now hope to see girls carry themselves with ease and freedom, for no sensible girl will longer torture herself with the horrible high starched collar of the past.

When a blouse is made finished off with a band

of it self, it is best to make it an inch below the waist line, to prevent the parting of the body and skirt at the back.

Since the narrow skirts have come into fashion again, the placket-hole is now made at the side of the skirt.

To prevent the ill-fitting and ugly collars so often seen, they must be cut on the cross, as it is quite impossible to fit some necks in any other way.

There are rules to be observed about blouses which are very simple.

If the figure is short and thick trim the blouse lengthwise.

Slightly point the bodice in front, and finish it with a bias-fold of the goods.

A coloured, or black belt, worn with a blouse, will shorten the waist by a couple of inches.

Narrow vests will always be found suitable.

If these little matters were studied more, and acted upon, we should not see so often ill shaped figures which are an offence to the artistic eye.

AN ECONOMICAL DISH

Two pounds of neck of mutton cut in small pieces, nine potatoes, and two onions sliced thin. One-and-a-half cupful of flour, half-a-cupful of lard rubbed together, as for pastry. Put a layer of mutton in the bottom of a saucepan, then a layer of potatoes and onions, with salt, pepper, and sage to taste, then another layer of mutton, and so on. Add a little water, cover the last layer with the paste, cover tightly with a lid, and set where it will cook slowly for two hours. Add only a little water, as the steam will make moisture.

APRICOT PUDDING

Place in a buttered mould a layer of sponge cakes, then a layer of stewed apricots, then another layer of sponge cakes, and so on till the dish is full. Beat up two eggs in one and a half pints of milk, pour slowly over the pudding, steam for one and a half hours, and serve.

SPICED RHUBARB

Sprinkle 2½ lbs rhubarb peeled and sliced thin with 1 lb sugar. Let stand over night and in the morning drain off the syrup into a preserve kettle, add 1 cup sugar, ½ cup water and ½ cup vinegar.

Tie in small cheesecloth bags $\frac{1}{2}$ teaspoon each of cloves, mace, allspice and ginger and 1 teaspoon cinnamon ; boil until the consistency of syrup, then add the rhubarb and cook until clear. This is a valuable addition to the winter's stores.

SALMON MAYONNAISE

Take a pound of cold boiled salmon, free from bone and skin, and divide it into flakes. For the sauce, beat up the yolks of 3 or 4 eggs with half a teaspoonful of freshly-made mustard, half a teaspoonful of salt, and a teaspoonful of vinegar ; add, by slow degrees, drop by drop at first, a quarter of a pint of salad oil ; continually keep stirring quickly as you drop the oil, and never cease the stirring until the mixture becomes thick ; if too thick, you may add a teaspoonful more of vinegar, which will be a help in whisking up the ingredients. Continue to whisk until it is the thickness you wish. Add some finely-chopped tarragon or parsley. Some like to add to the tarragon some chervil and spring or very young onions ; these two additions are matters of taste. Have some nicely-cut-up salad ; put a layer of this into a bowl, on the top of that half the salmon flakes, pour some sauce over, then another layer of salad, then the remainder of the salmon, and over that, as before, the sauce. Some ornament with sliced cucumber only ; others garnish the dish round with cress, lettuce, and radishes, decorating the centre with pieces of aspic jelly. But there are as many ways of decorating your dish as there are of making the sauce.

SEASONABLE HINTS

PRESERVING PEAS IN BOTTLES

The peas should not be old, but they must be quite fully grown ; the soft miniature peas cannot be successfully used. The peas ought to be gathered on a perfectly fine, dry day. Have clean round and perfectly dry wide-mouthed bottles ; if you leave any dampness in these the peas will become mouldy after a little time. Shell the peas into the dry bottles, now and then shaking them gently to make the peas lie close. When filled, cork the bottles, and tie a moistened bladder over them tightly to keep out the air. Have a large fish kettle, lay a little hay over the bottom and round the sides of it, and a little wisp round each bottle ; pour cold water into the fish kettle, and

carefully pack the bottles, filled, corked, and hay-wisped as above in it. The water should reach to the necks of the bottles. Put the fish kettle on the fire or hot plate, as the case may be, and keep it boiling for 2 hours from the time the water boils. As the water boils away it may be necessary to add some to the kettle ; if so, let it be boiling when you add it. After the 2 hours' boiling draw the kettle from the fire, but allow the bottles to remain standing in it until the water is quite cold. Do not take them out till then. Wipe them dry, and cover all over the tops with melted resin. Store them in a dry, cool place.

TO PICKLE NASTURTIUM SEEDS AS CAPERS FOR SAUCES, &c.

You should gather the seeds while they are quite young and as soft as green peas. Wash them in cold water, adding a little salt to the water, and let them soak in this till next day. They must then be taken from the water and dried in a cloth, and put into clean, carefully dried glass bottles, and covered over with cold vinegar which has previously been boiled. To each pint bottle add half a tablespoonful of salt, half-a-dozen peppercorns, one clove, a few chips of horseradish, and two or three leaves of tarragon, if you happen to have it by you. As each bottle is filled it must at once be securely corked down and sealed over for next year's consumption. Many people consider that with boiled mutton these nasturtium pickles are superior to capers. To make a sauce with them, first make some ordinary melted-butter, add gravy stock in equal parts or thereabouts, stir in a very little cayenne, about a small pinch, say, and a little salt, and half a tumblerful of the pickled seeds, which must previously be dried in a cloth and chopped small, boil up again, and either serve separately or pour over the boiled mutton.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

PRACTICAL.

Plants from arid regions.

The United States Agricultural Department has sent a special agent to Europe and Africa to obtain a variety of seeds and plants which grow in places

where drought prevails and which he has forwarded to Washington together with careful notes on their cultivation and harvesting. He reports having found many plants and vegetables which he thinks will be suitable to some dry portions of the United States and perhaps there may be some which would be of use in Canada in seasons of drought such as we have lately experienced. It will be well to keep this in view.

CURIOSITIES.

Ancient Egyptian Sweet Peas.

At the Windsor Flower Show, England, Sweet-Pea vines were exhibited which were grown from seed taken from the tomb of an Egyptian mummy buried 2,000 years ago. The blossom is of a delicate pink and white in color, and is less than the ordinary size.

The Blue Rose.

An account of a blue rose has been given by German gardeners. Specimens were sent to Nursery firm from Servia bearing beautiful violet-blue flowers and they will offer plants for sale as soon as they prove whether the variety will retain its remarkable color under cultivation.

It is doubtful if a *blue* rose would be so much an acquisition as some may at first imagine. One of the charms of the rose is the delicate, impalpable tint of its blossoms, beside which blue would be almost vulgar.

GARDENING THREE THOUSAND FIVE HUNDRED YEARS AGO.

In the British Museum are several volumes of diaries, notes and descriptions of hieroglyphics, which were made in the early part of the present century by an Englishman who resided for a number of years in Egypt, and spent much of his time in Thebes, where he devoted himself to the investigation of its ancient tombs and monuments. He was an artist and an enthusiastic antiquarian, and spent a good part of his time in digging for and making drawings of ancient tombs and their contents. Among these he discovered one belonging to a man named *Nekht* who was head gardener to the reigning monarch Thothmes III. One thousand five hundred years before Christ, the gardens of which he had charge were attached to the great temple at Karnak. A party of antiquarians again explored the tomb of *Nekht* last winter, and

found the stone-coffin which once contained the body of the ancient Theban gardener. On the walls of the tomb were painted scenes representing his private house, a mud-brick, two storied edifice, white-washed on the outside, with a great wooden front door, and, what is still more interesting, near to the house is depicted the garden, surrounded by shady-trees and intersected by a stream and two little ponds of water in which white and blue pond lilies are growing. The water was also used for irrigation, as two men are shown in the picture with water-pots, diligently watering the plants.

On the south side of the house is an arbor over which vines are trained. The trees which lined the garden were sycamores with dense foliage, under which *Nekht* cooled himself during the heat of Summer, and breathed the air of the sweet north wind. All this goes to show that *Nekht* was a man of note in his day, having charge of the garden of Karnak he occupied no mean position.

A plan of this wonderful garden has also been preserved painted on the walls of the tomb of another Theban official; it shows that the enclosure was nearly square and surrounded by high walls. In the centre was the vineyard, the vines being trained on trellis-work supported by brick and stone pillars. Around the garden, immediately outside the walls, was an avenue of dates and other palms, and inside this again, was a row of sycamores; palms were also planted on either side of the vineyard, and in the spaces between the rows of choice exotics, and tanks in which aquatic plants were cultivated, a hieroglyphic-inscription records that the whole was laid out in the time of Thothmes III.

In the reign of the preceding king, attempts had been made to acclimatize plants foreign to Egypt, but after the accession of Thothmes III a great many were introduced into the valley of the Nile and many planted in the Karnak palace-garden. Many of these are found figured on the walls of the temple and so true are the pictures to nature that their prototypes are easily identified. Among these are the Flag or Iris, our own Easter Lily, *Lilium candidum*, the Arum, *pancratium*, gentian, pink, and several species of water Lilies. An inscription referring to the states that all the plants came from Syria. Later in the same reign, an inscription states that flowering plants and fruit trees had been imported from Mesopotamia, Arabia and the Isles of Greece.

All this showed a great spirit of enterprise on the part of the Egyptians, for it is to be presumed that they had no rapid transit or cold storage in those days, and plant importing involved a good deal of risk, danger and outlay of treasure. Notwithstanding, the Ancient Egyptian seems to have stocked his garden with all the variety of plants which could be obtained.

At an early period the ancients were keenly alive to the pleasure to be derived from the sweet odor of flowers and made great use of them for their perfume. The fruits, of which a list was found in yet another Theban tomb, were sweet dates, red and yellow figs, olives, pomegranates, and apples. Officially Nekht bore the title of "Surveyor of flowers" for the god Amen, and he had to supply, not only the king, but the priests with flowers and fruits for the temple. It is a well ascertained fact that great quantities of flowers were used to embellish the houses of the wealthy on all state occasions. In his tomb our hero Nekht is depicted presenting the king with a huge bouquet composed of such flowers as are now found in the gardens of Egypt and garlands of the same are frequently found in the graves, which have been buried with the dead thousands of years ago.

Such information, for which there is unimpeachable authority is full of interest to the lovers of gardening, showing that the science held an honorable place in all ages since the world began.

THE GOOD AND THE POOR GARDENER A CONTRAST.

The good gardener loves his profession, the poor one shows by his work that he is indifferent to it, displays no enthusiasm, and practises it as a mere matter of routine.

The good gardener finds his occupation full of pleasure, the poor one a series of daily tasks. The results of their works are to the first full of satisfaction and to the last full of disappointment.

The good gardener may be told by a glance at his surroundings: neatness and order are to be seen on every hand; the buildings in his charge are clean and well arranged, his tools are all bright, sharp, and in their proper places.

The tools of the poor gardener are usually left where they were last used, or if brought into the tool house, are thrown carelessly down without being cleaned, and when they are wanted, if they

can be found, they are covered with mud and rust, and unfit for use. Look at the good gardener's work-shop or rotting shed: the bench will be clean and in order, bins, holding the different sorts of earth and compost, or clean-washed pots, each size separate, all ready to hand. These, which may appear trifling particulars, bespeak the pains-taking, methodical gardener who takes a pride in his work. But alas! what a difference is observable in the potting-shed of the careless and indifferent. The bench is all cluttered up with old earth, dirty pots and dead plants which have been thrown out. (The poor gardener often has an accumulation of these, for somehow, more of his plants die, than his neighbours). Pots dirty, cracked, or broken are scattered about in every direction, all the sizes mixed in utter confusion, and more are broken when out of use than when in actual service. The good gardener's garden bears the same aspect for neatness and order, no weeds, no rough, uncropped, barren spots, every thing planted in straight lines. Trees, bushes, and vines properly pruned, trained, and staked; crops sprayed, and every effort made to check the ravages of insects or disease, from which the gardens is remarkably free in consequence.

The poor gardener's garden has some unsightly patches which have not been cropped and on which weeds have been allowed to grow, flower, and ripen their seed. There should be no waste spot in a garden during the summer, but as an early crop is taken off a later one should be planted to succeed it. A weed which has been permitted to grow in a garden, and produce seed is a disgrace to the person in charge, indeed, weeds should never be seen any further developed than the seed leaf.

And why is it that garden of the good gardener bears such evident marks of care and attention? It is because his heart is in his work, he is up with the lark and "earliness" is his watchword in everything he does. By rising early he witnesses some of the operations, and enjoys some of the beauties of Nature which the sluggard misses.

The springing grass is never so delightfully fresh and green as when bespangled with the morning dewdrop, the Rose never so enchantingly beautiful or fragrant as at the dawning of the day, The blossoms of the morning glory close as soon as the hot glare of sun shine strikes them. The Violet and the Primrose exhale no sweetness

equal to that with which they scent the air at the first blush of morn.

The good gardener's work does not drag but he is beforehand with it, and when night comes he has the satisfaction of feeling that his day has been well spent, and no necessary operation has been neglected. Young said: "Procrastination is the thief of time," and the proverb applies very forcibly in the gardening. The gardener must ever remember that there is no time like the present, and that sometimes an hour delay may be fatal. And how about the poor gardener. He lies in bed, lets the weeds grow, and the caterpillars prey upon the growing crops, or blight, rust and mildew thrive upon the vitals of the fruit trees without any attempt to prevent or destroy them by the simple means now so well understood and placed at his disposal. He will say to himself, for instance: "I must put some hellebore on my currants bushes to day," but he does not do it while it is on his mind, neglects it and the next thing he notices is that the currant worms, more prompt than he, have stripped the bushes of their leaves and ruined the crop of fruit.

This a specimen of his proceedings, and shows that neglect always ends with disaster and loss. How superior too are the products of the good gardener's land; the crops are not only larger and earlier but of better quality; and quality in fruit, flowers, and culinary vegetables is of greater importance than quantity, hence the grower will feel justifiable pride in the fine specimens which he can send to table, and which his skill and care have assisted Dame Nature to produce in profusion and perfection. Instead of this the poor gardener will have nothing but poor stunted, juiceless worm-eaten rubbish to offer, and will always be "at outs" with the cook.

The good gardener will never be content with the knowledge he has acquired but will be continually searching for more, and part of his time will be spent in reading some authentic books or periodicals which treat on the subject, and keeping himself well posted as to what others are doing, or discovering, and not suffer himself to be left behind in this age of scientific progress. He will be an active member of the nearest horticultural society, and will take pleasure in exhibiting examples of his skill, not for his own glory alone, but that others may be emulated to constant endeavour to excel, and thus his profession will be elevated, and the public benefited. The poor

gardener will have no such aspirations; the less a man knows, it often happens that the more he thinks he knows, and the fool despises knowledge. If you advise him to study, he scoffs at the idea, calls improved processes "new fangled notions," says that authors cannot teach him anything, and that they only write for money or popularity. He keeps away from the Gardener's Institute or Horticultural Association under the plea that it is only run by a few for self interest who have no use for such as he, and in this he is right for they have not only to reform him. (1)

A good gardener will make no boast of his doings but let the results speak for themselves. It is no uncommon thing for a poor gardener to sneer at his neighbours success, and make the weather or lack of time an excuse for his own want of it, when in many cases it may be due entirely to his own shortennings.

The poor gardeher is poor in more senses than one. If we follow him into the privacy of his home we shall too frequently find that the force of his example has followed him there and the cultivation of his family, if he has one, has been as much neglected as that of his garden, and with similar results: the weeds of vice and immorality have taken or are taking root, healthy development of mind and body is not progressing, and there is a danger of bitter fruit being borne in after years.

In the home of the good gardener we may confidently look for a better state of things. The same motives and sentiments which actuate him in the management of his garden will affect his conduct as a husband and a father, and we shall find his cottage, neat, clean and the abode of happiness and contentement, because the rules of virtuous, social, and moral living are strictly obeyed, according to the precept and example of him who is at the head of the establishment, humble, though it may be.

Young man, if you propose to be a gardener, make up your mind to be a good, not a poor one, and then, if you are permitted to enjoy the inestimable blessings of health and strength, a pleasant, honorable, and reasonably profitable means of providing for yourself and family, fulfilling the conditions for which every man is sent into the world, and enjoying well earned peace at the last will opened to you and it will be your own fault if you dont take advantage of it.

GEO. MOORE.

(1) A passage evidently incomplete. Ed.

Correspondence.

PORTNEUF, Aug. 11th, 1899.

ARTHUR R. JENNER FUST, Esq., Montreal.

Dear Sir:—In reading over the July number of the *JOURNAL OF AGRICULTURE* I notice an article on the turnip fly.

Now about sixteen years ago we were so much troubled by the fly that we were tempted to give up turnips altogether. I wrote to Evans, seedsman, Montreal, for a remedy, and he said: Sow enough for yourself and the fly, which we did to no good effect, then I was told by some old Scotch farmer I forget the name, to put a few drops of coal oil on the seed before sowing and I should have no trouble. I have done this ever since and never been troubled in the least.

This number of your *Journal* is the first I have seen for many years.

Yours truly,

CARL O. SEWELL.

NOTE: Thanks for the hint. Coal oil is used largely in England, after being mixed with soap-suds, as a *sparge* over the newly germinated turnips and is found highly effective. ED.

The Dairy.

THE RIPENING OF CHEDDAR CHEESE.

By *Emile Castel.*

The question of the ripening of cheese is on the orders of the day, not only on our programme, but over one of the States of the American Union in which cheese-making is of any importance. For several years already, it has been under investigation in the Madison dairy-school, where has been made a series of researches and experiments, destined to establish the laws governing the ripening of Cheddar cheese. The task is arduous, and the problems demanding solution are numerous; but the affair is in good hands. Professors S. M. Babcock and F. L. Russell are not unknown to us, and we are sure that their labours are worthy of confidence. These two *savants* publish from time to time, in the reports of the Wisconsin Station, the progress of their researches, and it is in

these reports that I found the diagram you have before you, and which I have enlarged to submit it to your kind consideration.

Before attacking the explanation of this table, I think it well to submit to you some observations taken from the 14th annual report of the Wisconsin Station.

“The ripening of cheese is a natural phenomenon, the details of which are as yet but imperfectly known. Throughout the old manufacture of cheese, there is no one single process at once so important and yet more neglected than that of ripening. As soon as the cheese is on the shelves the maker, too often, troubles himself no more about it. If we consider the conditions under which cheese ripens in this country, we find that, as a rule, the details of the process of maturation receive either no attention at all, or very little. The ripening-rooms are in general built as cheaply as possible, no effort being made to control the temperature or the degree of humidity. It is by no means rare to find cheese in rooms whose temperature is subject to all the variations of the exterior temperature. Under such conditions, the losses are enormous, and in the opinion of the most authoritative experts, they amount in money to several millions of dollars.”

Messrs. Babcock and Russel are speaking here of the losses incurred by American cheese; and we—what shall we say of the losses incurred by Canadian cheese? The descriptions of the ripening-rooms you have just listened to only apply too well to those that we dare to call ripening-rooms here, and which are nothing but drying rooms.

To appreciate properly the necessity of thorough ripening, it is essential to understand, at least in a general way, the changes that take place during that process, as much as regards the physical as the chemical mutations. The solids of cheese, in a fresh state, consist of proteids (casein, etc.), fatty matter (butier), sugar and ash. During ripening, the sugar rapidly disappears, being converted into lactic acid and other sub-products; the fat and the constituents of the ash practically undergo no change, while the proteids, both physically and chemically, are the objects of recondit transformations. The addition of rennet to the milk converts the colloidal casein into an insoluble substance; and unless submitted to exterior agents, it remains for an indefinite period in the same state. During ripening, it gradually loses its properties, and is converted into a plastic mass

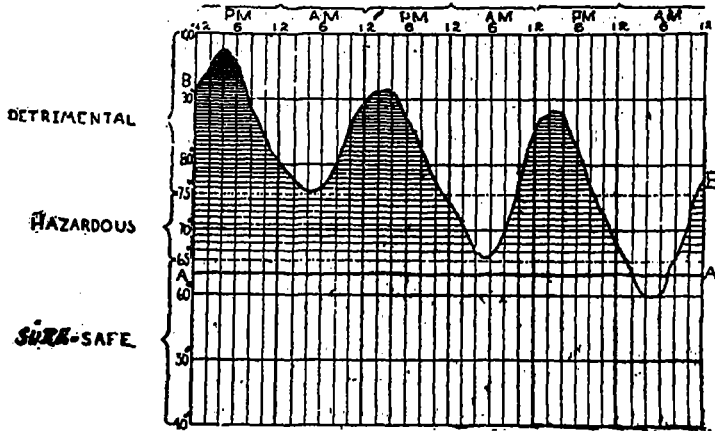


Diagram showing the daily fluctuations temperature in the ripening-rooms in September, 1897. A. A. cheese-cellar in the Wisconsin dairy-school. B. B. a badly isolated ripening-room too often to be met with. The depths of the shading the relative injurious effects of high temperatures.

(capable of being moulded or kneaded), having both texture and appearance utterly different. This alteration is caused by the decomposition, more or less perfect, of the curd, into substances analogous to *peptones*, and finally into compounds still more simple, which are more easy of digestion, and still more soluble than they originally were. The effects of these changes is to convert the green-cheese into a substance easily assimilable, and of a peculiar aroma, which is the essential characteristic of well matured cheese.

These two factors, texture and aroma, are to be considered apart from one another, for, in the light of our present knowledge, they are due to causes of a different order. In support of this assertion, we cite the fact, commonly noted, that, in the ripening of cheese, the texture has already undergone considerable changes before any characteristic aroma is developed. Up to the present in most of the treatises on cheese, these two points have been treated as one: whence much confusion. We shall only discuss here the alterations that affect the texture of cheese.

Theories on the ripening of cheese.

The first researches into the solution of this problem were made solely from the chemical point of view, and all the elucidations propounded of the changes observed were based on purely chemical action. The discoveries of Pasteur on fermentation gave a fresh impetus to the investigation, and a novel direction was indicated. Since that time, the biological side of the question has taken precedence, and, practically speaking, it may be said that all the theories relating to the

ripening of cheese are founded on the activity of living organisms: principally of bacteria. As to the presence of bacteria, in hard cheese, like Cheddar, the following facts are generally accepted:

When the casein becomes coagulated, a considerable proportion of the bacteria, present in the milk, find themselves in confinement. So that the cheese when it leaves the press contains precisely the same *flora* (plants) as the milk. In a few days (from 2 to 5), according to the condition in which the cheese is kept, the bacteria begin to develop themselves rapidly. Not that all the species develop at the same pace; the most active are those capable of the production of lactic acid. Those bacteria that have the property of peptonising or digesting the curd, are suppressed by the development of those producing lactic acid, and are generally eliminated. On the other hand, the lactic acid bacteria assume an enormous development, so that each *gramme* (about 15½ grains), often contains several millions of them. This phenomenal development continues for a variable time, and then the bacteria, all of a sudden, quickly become fewer. During the period of development, the cheese shows clear signs of maturation, the casein (curd) becoming soft and more soluble.

It is the English savant, Lloyd, who first showed the predominance of the lactic type of bacteria in Cheddar cheese. Freudenreich had showed it in Gruyère; and Russell confirmed their discoveries by his studies on American Cheddar. Lloyd and Freudenreich agree in attributing the leading part

in the ripening of cheese to these bacteria. Since these investigations, the general tendency has been to study the phenomena of the ripening of cheese solely from the bacteriological point of view. Professors Babcock and Russell now hold that they should be studied from both points of view, chemical and biological; their researches lead them to conclude that there is an inorganic ferment present, and here are the conclusions arrived at in their last publication:

"Nowadays, the phenomena of the ripening of cheese are explained by the sole action, direct or indirect, of bacteria that, present in the milk, become incorporated in the cheese. These phenomena are both physical and chemical in order. Physically, the green cheese is hard, elastic, and insoluble, presenting in thin slices an especially opaque appearance. In ripening, it softens, becomes more soluble and semi-transparent. Chemically speaking, the changes are almost entirely limited to the nitrogenous constituents, which are rendered more soluble and, consequently more digestible. Resulting from the decomposition of its proteids, the cheese contains albuminoids, albumoses, peptones, starchy products (tyrosin, leucin) and ammonia.

"The enormous development of the lactic acid bacteria in hard cheese, and the elimination, from the starting of the ripening, of the organisms of digestion and peptonisation, led Lloyd in his labours on English Cheddar, and Freudenreich, in his researches on Gruyère, to attribute the principal part in these changes to the ferments of sour milk.

"As far as they depend upon the bacteriological changes, we have been able to confirm these results; but, from the beginning of our work, we observed facts that do not agree with their theories.

"Two independent series of experiments showed us that very great changes, in both physical and chemical order, are produced in milk from which bacterial ferments have been excluded. In these experiments, the casein of the milk underwent practically the same phenomena of decomposition that are produced in the ripening of cheese, that is, all the insoluble casein was converted into soluble nitrogenous matters, as was observed before.

"Parallel experiments with cheese gave like results, qualitative and quantitative, the products obtained being in no wise different from those of a cheese ripened normally.

"Having eliminated the effects of the organised ferments (bacteria) by means of chemical agents, such as ether, chloroform, benzol, &c., which do not affect the action of non organised ferments, we arrived at the conclusion that the changes produced were not due to the living organisms, but without the slightest doubt, to enzymes. (1)

"As to the origin of these enzymes, two hypotheses offer themselves: either they are produced by the bacteria which were developed in the milk before the application of the anaesthetics; or they are inherent in the milk itself. The possibility of the work of the bacteria may be got rid of by taking milk, very carefully drawn from the cow, and treated at once with antiseptics. Milk, tested immediately after milking, undergoes the same changes as the rest, thus proving that enzymes exist in milk. By the use of the ordinary physiological methods, the enzymes that act on nitrogenous matters, and which, applied to milk, have coagulating as well as digestive powers, were isolated. The recent efforts to explain the peptonisation of the casein by a digestive function of the bacteria of the lactic acid type, have eliminated that factor, because the milk employed in these experiments had been sterilised by heat, a process which weakened, if not destroyed, the natural ferments of the milk. It is, then, our conviction, at present that the ripening of hard cheese, instead of being due solely to bacterial action, is caused by the united action of organic ferments (bacteria) and inorganic ferments (enzymes). To the action of the enzymes on the cheese is undoubtedly due in great part the softening of the casein; as regards the production of the characteristic aromas, our knowledge is, as yet, too vague to allow of our affirming anything positively, as to their origin. According to all probability, the bacteria, in this point, play a much more important part.

(To be continued)

(Trans. by the Editor).

PACKING DAIRY BUTTER

A problem which puzzles many of our good dairy butter makers today, is how to put up their butter for market in such a way that it will bring the price its merits.

The style and size of package depend upon the market. Where one is obliged to take their butter

(1) *Zymè* is Greek for yeast. Ed.

to a grocer, the gallon and half-gallon crocks are usually preferred. If one has private customers, it depends wholly up-on the quantity used. The gem paper packages are light, substantial, and reasonable in price, ranging in size from 1 to 20-pound packages. Where you ship to large grocers or commission houses, the 60-pound white ash tub is desirable. A very good packer for putting the butter in small packages can be made by taking a common wooden potato masher, sand-papering until it is smooth, scalding and cooling. For the tubs one needs a packer such as those used by creamery butter makers.

Before putting butter in crocks, be sure that they have been thoroughly scalded and cooled. Never use crocks which have held anything but good pure, sweet butter; as lard, yeast, pickles, or, in fact, almost anything will affect the glazing of the jar enough to taint the finest of butter, if it is left in a jar any length of time. In packing, only put in small quantities at a time, and press down firmly, so there will be no pools of brine; continue in this manner until the butter is rounded over the top of jar. Even the top by taking the ends of a piece of twine (which has been wet) in both hands, holding it close against top of jar. With a saying motion draw across, then holding jar slanting over bowl or churn, carefully lifting the upper edge of butter from jar with ladle, the air will get under the layer, which will drop off, leaving an even surface, which looks much nicer than when smoothed off with a ladle, which is apt to give a salvy appearance.

Place on the top a circle or cap of butter cloth. (These circles may be procured of any dealer in dairy supplies for a few cents per thousand in sizes to fit any package.) On top of cloth put an even layer of nice, clean butter salt, over which sprinkle a little water, and you will have an air tight crust. Cover this with fresh, clean, manilla paper; fasten on by passing twine below rim of jar two or three times and tying with single bow-knot. Trim paper evenly from one-half to three-fourths of an inch below twine, and you will have a package which will find ready sale.

Mark your package with name or private mark, always the same, and in a manner which is not easily imitated, as I have known grocers to go so far as to write the name of some good butter maker on a jar of any butter they happened to have in order to make a sale.

It does not take long for a good butter maker

to gain a reputation in the circle where the goods are consumed, and after a few trials the goods are called for by name or mark, and the customer does not find it necessary to have the butter opened for inspection.

If, by accident, you happen to have a poor lot of butter, tell your dealer and let him sell it for its value. Don't run the risk of losing your hard earned reputation of a good butter maker, for the few paltry cents gained by palming off a lot of poor butter under your regular mark. If one has not been fortunate enough to secure regular customers, at a good fair price, and is making a sufficient quantity to ship, it is much less labor, and more satisfactory to send it to some good, reliable commission firm. Use the best white ash sixty-pound tub, thoroughly washed, scalded and soaked in brine, to prevent mould. Always line with good parchment, with it is also advisable to scald and brine. After the tub is neatly lined, pack and even off same as the jars, turning the parchment (which should be left above top of tub about three-fourths of an inch) over the butter, laying in small pleats, putting the cloth circle over the parchment, and covering with salt. Fasten the cover of tub down with three tins placed at an equal distance apart on the cover.

In fact, do not neglect any little thing, no matter how trifling, which will add to the neatness of the package, as neatness in this respect is just as essential as in the manufacture of the butter, and there we know it is one of the important factors. Remember that it is the outside of the package which the consumer sees first. I never realized until a short time ago how many good butter makers there were who were careless in this one respect. Perhaps by mentioning one or two cases, the reader will not think that I am a crank on this subject, or as I have been told that there was too much red tape about my butter making. While in a grocery store not long ago, an old gentleman came in with fifteen pounds of very nice butter in prints, wrapped in hand towels. The dealer offered him $2\frac{1}{2}$ cents per pound less than they were giving for butter in crocks. The old gentleman was quite indignant, but was told that they had no place where they could keep print butter free from taint. After the old gentleman went out, being a little curious over the butter, I watched to see what was done with it. The dealer took it from the towel, placed it on a platter, covered it with clean, fresh-looking

paper, called an errand boy, and sent it to a hotel near by, remarking to me at the time that Mrs. So and So had left an order for good butter, and was willing to pay a little extra. I knew that he had refused to pay within $2\frac{1}{2}$ cents as much as crock butter was bringing only a few minutes before. As it takes so little for an excuse to drop on the price, it stands us in hand not to leave any show for the excuse. Never use any cloth about butter, which has the suspicious look of coming from some worn-out garment.

While waiting at the depot, my attention was called to a lot of jars piled on the platform. On inquiry I found they contained butter, which surprised me very much, as out of fifteen or twenty jars not one of them was tied up neatly, and they were to be shipped twenty-fives miles. I don't think any of them having paper over the top had anything but newspapers, and on one there was just a thin cloth between the printer's ink and butter. The taste of the ink would, in a short time, permeate the whole jar of butter. Many of them had large, coarse cloths, some even faded-out calicos over the top, and not one of them trimmed off, but corners and ravelings flying as the wind blew them. Please don't think that carelessness is confined to the dairy butter makers. Far from it.

While at the dairy convention last December, judge of our surprise upon lifting the covers of some of the creamery butter tubs to find the salt fairly black, where a dusty cover had been put on. Others hadn't any salt on the cloth cap, while on many the parchment side lining was left from two or three inches above the edge of tub, on some the covers were put on so that the lining was below the edge of cover; on others it was crowded down in rolls on top of salt. While many of them were left about three-fourths inch above tub, folded neatly over the edge of the butter, being laid in tiny pleats so that it would set smoothly. Then the cloth cap with an even layer of salt on top. Any butter maker, who has any interest in his work, could see at a glance the difference. Some say we don't know how. Then ask. If you cannot find out at home, ask *The Farmer* and you will surely get an answer. If still in doubt, read Gossip in the Butter Stores, by Man on the street, in New York Produce Review. If your butter is not selling at the highest price, you know there is something the matter.—*The Farmer*.

PREVENTING MOULD IN CHEESE.—ICE IN CURING-ROOMS.

To the Editor of FARMING :

I received your letter of the 26th inst. asking me if I had had any experience in using Formalin to prevent mould on cheese. I never used it myself, but have seen it used. Some say it is no use. I think the trouble is that the makers do not use enough of it to kill all the germs. I have been in Mr. Barr's factory at different times this summer and there is no mould on his cheese and there is a different smell in his curing-room from that of any other factory that I have been in; you could hardly tell there was cheese in the curing-room if you did not see them, it had such a nice, clean, sweet smell.

In regard to curing cheese I find quite an improvement in the curing-rooms. Nearly all are putting in ice-boxes and have been controlling the temperature of the room fairly well so far. Makers are all anxious about keeping the temperature right and I think it is a great help to the cheese-trade to have finer cheese. As to sub-earth ducts they are none in operation in this section so I cannot say anything about them just now. Using ice in the curing-room seems to be all right, excepting that the cheese is more inclined to mould which is the only objection I have to make to its use.

In regard to the quality of the cheese; so far the quality has been fine, the best for years. Everything has been in its favor, good grass, good water and cool nights. In so far as the makers are concerned in the making of the cheese they are not improving as fast as they might. During this last week gassy curds have been more common in some factories.

GEO. McDONALD,

Dairy Instructor.

Bluevale, Ont., July 29th, 1899.

