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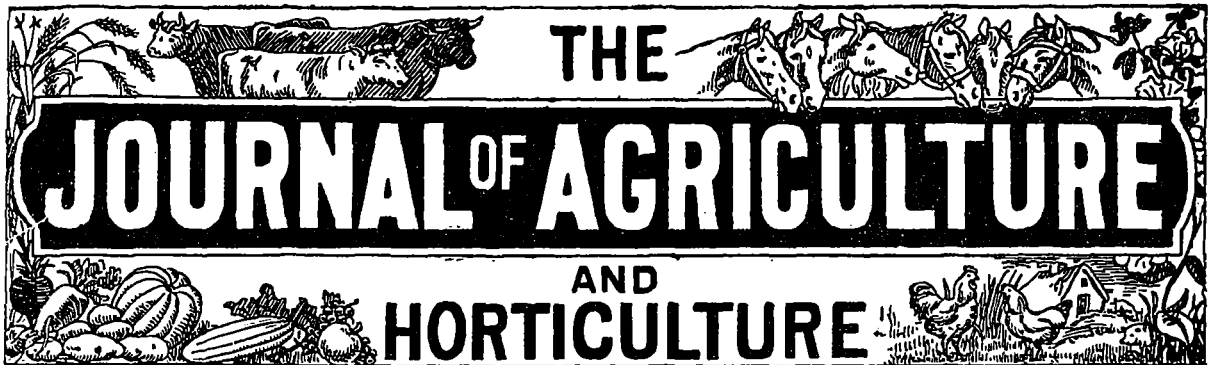
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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

Vol. 4. No. 3

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

Aug. 1st, 1900

- THE -
Journal of Agriculture and Horticulture

The Farm.

NOTES BY THE WAY.

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 etc. 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
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St-Anne de Bellevue.

And by no means pleasant notes either, for *the weather* has been, and is, about as unpropitious as an enemy to the country could desire. Just about to rain again (July 13th), which will make nine days of wet in succession. As for wind! well, the blast of the 11th, that struck us as we were at dinner, 7 P. M., was one of the most tremendous squalls we ever remember. The idiot who built our house perched it on a high point fully exposed to the S.-W., and that in spite of the existence of a charming wood, not a hundred a yards to the west, that would have been an efficient protection against a hurricane. Our poor tobacco, that was looking splendid, was sorely maltreated, the stems being snapped off short just above the ground, though it has been well earthed up. Haricot-beans, pease, turnips, all seriously damaged, and the sweet corn thrown down and scrawled about. As for the sun, that luminary, evidently does not care to look upon such a lamentable sight, as he carefully keeps his countenance veiled, except for a passing blink now and then.

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The forward crops, such as *oats* and *pease* (*maslin*), are a good deal laid, and, as usual in damp seasons, the pease have deserted their protectors, the oats, and probably will remain on the ground; in which case, the pods will not fill: why are people so fond of double crops here? The weather that suits oats does not certainly suit pease; far better sow, the two in separate

fields. The only mixed crop that answers is the fodder crop of oats and tares or vetches; of this mixture we have three pieces, all sown at intervals of a fortnight, the first of which was begun on the 5th instance, as the tares were just coming into bloom, and the other two lots will be ready in succession. Mighty glad were the cows of the novel food, for on this land pasture is a mere mockery, two hot days being enough to parch it up.

The oat-crop is looking well, but cannot all ripen together, as the seed used was of two kinds, White-Tartars and the common oat. On such a soil as this the Tartars are by far the more profitable: the black for choice; for though, perhaps, the white gives more bushels to the acre, the superior weight per bushel of the black more than over-balances that advantage.

The roots are in a perilous condition; no singling done yet, the land is "as wet as muck," and the weeds rampant, and as the hay is more than ready for mowing, it becomes a question as to whether the root crop will ever be properly cleaned. (Not done yet! August 2nd!) The plant of swedes is as good as can be desired, but the mangels, from an insufficient seeding, are scanty; there must be many a gap in them at harvest. Thin seeding of roots is a great mistake. Three pounds of white turnip seed, $3\frac{1}{2}$ of swedes, 4lbs of mangels, and the same of carrots, are not too much on an *imperial* acre; one-sixth less on an *arpent*.

The early potatoes are a failure; why, is quite clear: the land was ploughed when wet, and is now so *steely* that the tubers cannot swell. They were begun upon this morning, but, although the land has been heavily manured for now the sixth year in succession, we doubt if there will be more than say, 70 bushels to the *arpent*, and the tubers are too small to sell well.

The hay-crop is poor; quite fit for cutting, what there is of it, but most of the pieces are more weeds than anything else. In one field, a lot of alsike has shown itself, but no red clover at all; the timothy is in its first season, so, as usual, it is not very thick on the ground, though of a pretty fair height. (1)

(1) Began to cut July 24th. Eu.

Foot-rot.—In a wet summer like this, sheep will, very probably, suffer from foot-rot. Many years ago, it was our lot to pass through three seasons in which this very troublesome complaint was perpetually attacking the flocks. A sheep, three-parts fat, would fall away from the agonising pain, and lose in a few days ten or twelve pounds in weight. Some people fancied foot-rot was contagious, but our own idea always was that its attacks were due to a super-abundance of moisture in the soil caused by persistent wet weather.

How to cure foot-rot.—Well, we have cured it with our own hands, and, though it takes time and trouble, we do not think that any one need despair of succeeding, if he will follow out the following instructions. You are sure to meet with it sooner or later, so you may as well learn how to cure it before it arrives.

Mr. Stephens, in his "Book of the farm," says that our treatment is cruel; may be so, but the disease is worse than the cure. With a steady hand, and a very sharp knife, pare away all the loose horn of the foot, taking care to leave the affected flesh quite bare. Then, with a feather, dress the parts with *butter of antimony*, taking care that it reaches every bit of the spongy part. The flesh will smoke under the dressing, but if the treatment is un pityingly carried out, the patient will recover, and that is surely, in the long run, more humane than allowing the poor beast to die in agonies of pain, as he undisputably will, if the complaint is allowed to run its course.

Lambs, soon now to be weaned, are troubled with but few complaints as long as they are on the milk; but a change from a barren pasture, after they leave their dams, to a luxuriant bite of grass, will frequently cause diarrhoea. Half an ounce of Epsom salts, with a little ginger to soothe the stomach, will commonly settle the question. Care should be taken, especially in a wooded district, to keep all the parts round the tail perfectly clean, for if that is not attended to, *the fly* will play mischief with them. Just before weaning time, the wool growing on the outside between the thighs should be shorn, and the lambs should be dipped as soon as weaned.

Ewes.—If any of the ewes, after their lambs are weaned, should appear to have a flush of milk

upon them, they should be dried off as carefully as a cow would be. In such a case, the ewe should be milked by hand at intervals of twelve hours, then 24 hours, and then 36 hours, and we need not say that the less succulent her food is the better. The danger to be guarded against is lest the teats be plugged up with cheesy matter and no passage be found for the milk at the next lambing time, when the udder will probably inflame, and the ewe have to be killed to save her life.

Dipping.—All the best flock masters of our time used to dip their flocks twice a year; or at least dip the lambs at shearing time and the whole flock in the fall. The sheep is dipped in a tub containing a solution of the stuff in water, and when thoroughly soaked, the patient is placed on a strainer, so constructed that the liquid squeezed from the wool runs back into the tub. There are several compositions used for this purpose, and any respectable druggist at Montreal will gladly supply them. Mr. Henry Gray, St. Lawrence Main street, is fully acquainted with our views on the subject. We strongly advise every farmer to dip any sheep newly purchased before they are allowed to join the flock already on the farm.

We forgot to mention that, when the fly is troublesome to the heads of the sheep, it used to be the practice in England to put a sort of cap over the skull tied under the ears before and behind. Sheep will butt at each other, and if a place is skinned, the fly attacks it at once, and drives the poor beast crazy.

Green-fodder.—Do not allow the green-fodder pieces to stand too long before beginning to cut them. We observed this mistake committed here last year, and, consequently, before the crop was half used, the lower part of the stem of the vetches was too old and hard for the cows to eat. Begin as soon as the vetches are in bloom and have small proportionate pieces and several of them. Never allow your cows to fall off in their milk-yield for want of succulent food. Cut some of the clover or hay for them, even some of the oats, rather than stint them.

Shorthorns.—“The Breeders’ Gazette,” of Chicago, says that there is no doubt about the short-

horn (Durham) being the favourite dairy-cow of the English farmer. Mr. Tindal, at the Gloucester Conference of Dairymen, declared the Shorthorn cow to be “superior to all others for the purposes of the dairy-farmer, and all our leading dairy-districts attest this fact by using Shorthorns, more or less pure bred, or native sorts repeatedly crossed with them.”

On Monday, July 16th, the land close to this house will be ploughed, grubbed, harrowed and rolled, and drilled in with *white turnips*, as the last swath of vetches will go to the cows this evening.

Quick germination.—On Tuesday 10th instance, we sowed a small piece of white turnips for the table. To-day, Friday 13th, exactly 72 hours after seeding the plants were through the ground!

GREEN ALFALFA FOR COWS

(Press Bulletin)

During the summer of 1899, the Kansas Agricultural College fed ten head of cows on green alfalfa for a period of 74 days. During this time they received 77,145 pounds of alfalfa and 1623 pounds of corn and kafir corn meal. On account of other experimental work it was impossible to retain the same field of alfalfa through the entire period, and consequently we could not measure the area used, but figuring on the basis of dry matter produced and comparing it with the amount produced by an average yield of four tons of well cured hay per acre we find that it took 2.97 acres to keep ten cows 74 days. During this time these cows yielded \$35.69 worth of butter fat and skimmilk. The grain cost \$10.65. This leaves \$75.04 to be credited to the green alfalfa, amounting to \$1.95 per ton, or \$25.26 per acre.

Green alfalfa is relished by the cows and a field can be kept in good condition for feeding during the whole summer. Where pasturage is abundant it will doubtless not pay to feed green alfalfa, but where pasture land is scarce, or the grass becomes short or dry, green alfalfa furnishes an excellent feed and will not only keep up the flow of milk for the time being, but will help materially to maintain a large flow through a longer

period of location. Pasturing alfalfa will sometimes cause cows to bloat. We did not have a single case of bloat from cutting alfalfa and feeding it green.

D. H. OTIS.

Kansas Experiment Station.

GROWING RAPE

Those unfamiliar with rape can best gain an idea of how it looks and what sort of a feeding substance it is by remembering that forage rape resembles a rutabaga turnip run to leaf instead of forming any enlarged root stalk. Nature has arranged that during the first season of growth the nutriment is stored in the leaves; during the second year in mild climates, where the plants survive the winter, its nutriment passes out of the leaves and up into the seed pods, where seeds are formed.

Rape is a hardy plant and can be sown any time from very early spring until after harvest, according to the wants of the stockman. To get the largest and the most nutritious crops, it should be sown in drills and cultivated the same manner as a root crop—with this important exception, however, no thinning is required. Where drilled, sow from two to three pounds of seed per acre. Rape may also be sown broadcast upon well-prepared land, in which case it should be covered lightly with a fine-tooth drag or a brush harrow. When broadcasted, from four to five pounds of seed should be used per acre.

Some farmers have received satisfactory returns by sowing rape seed on a field planted with oats or barley. In this case the best method of procedure is as follows: A week or ten days after the oats or barley have been sown, and just after the young plants have shown above the surface of the soil, sow two or three pounds of rape seed per acre; harrow this in with a light, fine tooth drag. Covering the seed in this manner does not injure the young oat or barley plants, but is a help rather than otherwise. By sowing later than the oat or barley seeding, the young rape plants are held in check and do not make much growth until after the main crop is harvested. Then having the benefits of full sunshine and all available moisture, the young plants spring forth rapidly and soon furnish a large amount of feed. Farmers who have sown rape seed along with oats or barley have found to their sorrow that in wet seasons the rape plants grow as tall as the grain and furnish

so much green material as to make trouble in harvesting the grain. The latter seeding of rape with grain is, therefore, to be recommended as the preferable practice.

In sections of the country where the seasons are fairly long, stubble fields may be plowed up and sowed to rape, and a great deal of forage secured before winter sets in.

No matter how the seed may be sown, the hardy plants spring up quickly, and during the early growth one cannot tell them from rutabaga or Swede turnips. When they reach a height of eight or ten inches they can be pastured by any kind of stock. Rape is most suitable for sheep, with pigs coming second. Of course the young plants are quite watery; as they grow older, the nutriment is more condensed and satisfactory.

So far as known to the writer, the only insect pest attacking the rape plant is a louse which severely injures it in hot, dry weather. This pest is sometimes avoided by planting the rape either very early or very late.

Care must be taken to order forage rape, for many mistakes have been made by seedsmen, who have furnished oil seed or bird seed rape instead. These latter varieties furnish plants which blossom about eight weeks after the seed is sown. A field of bird seed rape in bloom resembles a field of wild mustard, the yellow blossoms being visible from a long distance. The true forage rape does not blossom the same season the seed is sown, but bears its blossom and fruit the second year, the same as the cabbage and swede. Bird seed rape does not become a pest like wild mustard, but since the leaves are small like mustard leaves, there is little or no feeding value to the crop. In ordering seed, be sure to specify the Dwarf Essex forage rape. The seed is imported from England, or grown in the northwestern United States, near Puget Sound. It costs from four to ten cents per pound, according to the quantity ordered. It can be obtained from any reliable seedsman.

Rape is not harvested or cured like hay or other forage plants, but should be fed off in the green state. It can be cut and carried to the stock; in this case the amount the animals receive can be limited, and there is no danger of bloat, which is practically the only source of trouble in its use. Generally stockmen turn their animals directly into the rape field, allowing to feed at will.

Where the greatest returns are sought, portable fences are used to limit the animals to a given

area. Where lands are cheap there is no need of taking so much trouble, the stock being allowed to roam over the field at will. The only danger in the use of rape, as stated above, is from bloating, which trouble is not always easily avoided.

Animals should not be turned into the rape field for the first time until they have been well filled up on other feeds. Experience and experiments have shown that it is greatly to the advantage of stock to have a pasture field of grass adjacent to the rape field, so that the animals can feed on one or the other as appetite and conditions dictate. When pasture is available, bloating will rarely occur, the animals wisely protecting themselves by mixing their feed of grass and rape instead of consuming too much rape.

The rape plant has long been used by the farmers of Great Britain and the Continent, and it has been made use of for a long time past by some farmers on this continent, especially in Canada. Its prominent introduction to the public, however, was brought about by our Agricultural Colleges and Experiment Stations, the leader in this being the Ontario Agricultural College at Guelph. (1) If our colleges has done no other work than bring this one plant to the attention of our farmers generally, they would have paid for themselves. Stockmen, especially sheep and swine grower, are urged to use rape in a small way at first, enlarging the area sown as their experience in using it and their application of its merits grow.

—*Prof. Henry.*

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

BREAD MAKING.

The amateur bread maker will do well to remember that making bread in the summer is not quite the same as in the winter. Owing to the warmer temperature at this season of the year the process is much quicker.

To get the best results great care must be taken to catch the dough at the right time so that it shall not overwork itself or become sour by too long rising, it will not take a long time to learn when the dough has risen sufficiently to be worked into

loaves, do not make these too large for the pan, in which it is to be baked, let the pan be a little more than half full and as soon as it has risen to the top, bake in a moderately hot oven. In making up the loaves use the merest sprinkling of flour so as to avoid a raw taste of flour, the right quantity should be used in making the dough. A very light sprinkling of flour on the board and the hands buttered will keep the dough from sticking to the hands.

Some people even butter the board slightly, as every body knows a little butter adds to the flavour of the bread and helps to keep it from drying up too soon, also makes it lighter.

I have been told by Americans that they never think of making home-bread without a little shortening in it, and there is no doubt about their being good bread and cake makers, "but defend me from their ordinary meat cooks."

A light hand in mixing bread will ensure its being light, can stand doubling over with a slight pressure to break up the air bubbles will be all that is needed to do this.

To make good bread, the best flour is necessary, also good yeast, for although a practical baker can make bread "of a sort" with inferior flour, it would be unwise for the novice to practise on such.

HOME MADE YEAST.

Three nicely mashed potatoes.
 Three tablespoonfuls of flour.
 One tablespoonful of sugar.
 One teaspoonful of ground ginger.
 These ingredients to be well mixed.

Boil one handful of hops in about one pint and half of water, strain over the mixture, move this about all the time to secure the scalding of the flour, let the batter be rather thick, and when about luke warm stir into it a very small cup of the best yeast to be got. Test the batter so as to certain not to scald the yeast. This will keep good for at least a fortnight.

GINGER BEER

Take a rolling-pin and smash up two ounces of Jamaica ginger. Put into a crock with a pound and half of sugar, and the rinds of three lemons, pour over this one gallon of boiling water, cover up, and let stand till lukewarm. Now add the juice of three lemons, and one tablespoonful of

(1) We saw a fine field (10 acres) of rape at Mr. Cochrane's farm, Compton, in 1871. Ed. J. of A.

yeast. Let it stay and ferment about twelve hours, strain and bottle, cork well, it will be fit to drink in twenty-four hours.

Use less ginger if it is not liked strong.

LEMON SYRUP.

Take 6 lemons and after grating off some of the rind, squeeze and strain their juice, the grated rind helps to give flavour to the syrup. One pint of water, one pint of juice, $3\frac{1}{2}$ pounds of sugar. Place in a preserving pot and let it gently warm up till the sugar is all dissolved, then bottle for use.

Where lemons are scarce, this will come in handy at any time to make nice drinks in the heat of summer, use plain or iced water as taste dictates.

SPARKLING LEMONADE.

Slice up 6 large lemons and take out the pips. Sprinkle over them two teacupful of sugar, let stand about 15 minutes to draw out the flavour of lemons. Now pour over 3 quarts of cold water and add some lumps of ice, stir well and let it stand for an hour, now strain and serve.

If you wish it to sparkle put a pinch of carbonate of soda into each glass. A little more water will be required where there is no ice to be got.

DELICATE TEA ROLLS.

Tea or dinner rolls are a light sort of French bread, which is very delicious when eaten new. Rub one ounce of butter to one pound of flour, the flour having been previously placed near the fire to warm. Mix half an ounce of German yeast with a teaspoonful of sugar. Make a hole in the centre of the flour, and pour in the yeast, which will have liquified with the sugar; add half a pint of lukewarm milk, stirring it in to the yeast; cover with a clean cloth, and set in a warm place to sponge for half an hour. Then knead the whole into a soft elastic dough, and put it again near the fire till it has risen to twice its original size, which will be in about three hours. Make it into small rolls, set this to rise again for twenty minutes, then bake in a brisk oven.

SEED CAKE.

Rub $\frac{1}{2}$ lb. of good butter into $1\frac{1}{2}$ lb. of fine flour, then add half a teaspoonful of salt, $\frac{1}{4}$ lb. of

castor sugar, a large teaspoonful of baking powder, and 1 oz of carraway seeds, and mix well together; moisten in the usual way with beaten eggs and milk, and bake in a well heated oven. *Note:* If preferred, equal parts of butter and pure beef dripping may be used, or just dripping alone. The seeds, too, may either be used whole or they may be ground, just according to taste.

Sponge Pudding is very nice, and, moreover, economical if made as follows: Take a teaspoonful of self raising flour, and add to it a pinch of salt, half a teaspoonful of sifted sugar, and two ounces of butter; whisk well together, then add half a teacupful of fresh milk and two well-beaten eggs, yolks and whites together. Beat steadily for fifteen minutes; use to fill a well-greased tin about three-parts full, and bake in a moderate oven for twenty-five minutes; serve with apricots sauce poured over and around. To make the sauce take a teacupful of apricot jam; add to it a gill of brandy and water, half-and-half; make very hot, and rub through a heated gravy strained over and around the pudding; then serve at once.

For Prunes in batter wash half a pound of prunes in cold water, pour boiling water over them and allow them to soak until they are so soft that the stones can be removed. Spread the fruit on a dish, and dredge with flour. Place three tablespoonfuls of fine flour in a basin, and make it into a smooth paste with a gill of milk. Beat two eggs and add to them three quarters of a pint of milk. Add this to the flour, etc., beat all throughly, and stand for half an hour. Beat up again, and pour softly over the prunes. Stir all together, pour into a greased mould, tie over with a floured cloth. Plunge into fast boiling water, and boil for an hour.

CHILDREN'S DIET.

Meat once a day is usually enough for a child until he has reached ten or twelve years of age. His breakfast may consist of a well-cooked cereal, with milk or cream; of a soft-boiled egg; or fish or bacon; with plenty of whole-wheat bread and butter, and milk to drink. Some children seem to have an inherent dislike to meat, and can hardly be persuaded to take it in any form. The attempt to induce a child to overcome such a prejudice should not be too easily abandoned.

Such whims are not the trifling matter some people think. Apart from the harm it does to a child's disposition to give way to a caprice that cannot fail, sooner or later, to cause inconvenience to others; there is physical injury done to the child when he is permitted to confine himself too closely to one article or kind of food. If his muscles are to be firm, his flesh solid, his bones strong, his blood rich, he must eat that what will nourish each and all. Parents are apt to overlook the fact that it is not merely a question of gratifying the child's individual preferences for the time being, but that his whole future welfare is at stake.

SLEEPLESSNESS IN CHILDREN.

Sleeplessness is a trouble which should never be felt in infancy, if a child is in good health and brought up under sanitary conditions. Its chief causes are discomfort of the clothing or bed, indigestion arising from improper feeding, cold or too much warmth, too much light in the room, and noise.

To secure comfortable sleep for the baby, he should, after bathing, be quietly laid in his cot in a darkened room, and after he has once dropped off to sleep, no noise of talking, or movement about the room should be allowed if there is the least restlessness. He should be put to bed regularly at the same hour every night, so that to fall asleep becomes a custom, and however he may struggle to get up and go downstairs, as often happens after the first few months of infancy, this should not be yielded to. Sometimes the nerves have been over-excited, and the child becomes rebellious, screams, kicks, and cries. If this should happen it is exceedingly wrong to resort to punishment or whipping, as is sometimes done, for the excitement of the nerves may be due to some pain or indigestion, or to over-fatigue induced by seeing strangers, or being kept out too long. To restore peace, the child, when his passion is a little subdued, should be gently nursed in the lap, and quietly talked to, while its limb and back are rubbed. After a little a drink of milk may be given, and the infant will soon fall asleep, and may be laid in its cot.

Much depends on the way in which it is laid in its cot, for if the neck be bent in an uncomfortable way, restlessness will be induced. Baby should lie nearly flat with the head slightly raised on a specially made pillow, which should come well

under the neck and shoulders, and the bed-clothes should not be tucked in too tightly. A drink of cold water will often enable a child to turn over and go comfortably to sleep, and when the little one wakes its position in the cot should be changed, and its pillow taken up and beaten, and replaced on the opposite side to that on which the child has been lying, so that it may be cool.

STEWED BREAST OF LAMB.

Procure two nice fat breasts of lamb, remove the bones, and cut them in equal pieces two by three inches; brown the meat for ten minutes in a tablespoonful of butter, then remove the meat. Put in the gravy one and one-half tablespoonfuls of flour, stirring thoroughly. Put the meat back, mix well, and pour over it slowly enough warm water or stock to well cover it, add a dessert-spoonful of salt, pepper to taste, and a bouquet of three sprigs of parsley, half a branch of celery, half a bay-leaf, one very small sprig of thyme, and two cloves stuck in an onion. Tie the bouquet nicely so that you can remove it before serving. When the boiling point is reached skim carefully. Cover the saucepan, cook thirty minutes, then add one pint of freshly-shelled peas, one pint of small new potatoes, and half pint of small white onions. Cook slowly thirty minutes more, or till the meat is tender. If the bones are removed from the breast an hour or two before the stew is prepared, most excellent stock may be made, and used in the place of the water for stewing the meat in.

SUMMER DRINKS.

There are one or two simple inexpensive drinks which are highly appreciated by the youngsters, who are apt to get very thirsty during the hot weather. The first is a sort of lemonade, made as follows: Place an ounce of citric acid in a basin with two pounds of lump sugar and very thinly pared rind and juice of two lemons. Pour over this two quarts of boiling water and leave until cold. Bottle for use, as it will keep some little time. About half a wineglassful of this should be put into a tumbler, and filled up with cold water and soda water.

BARLEY WATER.

Another delicious summer drink is barley water. Perhaps some of you will think this cannot be

very good ; well, try it on some hot summer day, and you will see how good it is. Take three ounces of pearl barley and wash in several waters, then place in an enamelled saucepan, and pour over it a pint and a half of cold water, boil up for five minutes, and then pour the water away, add a quart of water, a strip of lemon or orange peel, and sugar to taste. Set the pan at the side of the fire and let it cook slowly for two hours, strain, and let it get perfectly cold ; serve with a lump of ice in it and a slice of lemon on the top.

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

SYSTEM vs. SCRIMMAGE.

It has been well said that "Order is Heavens first law." The universe exemplifies this truth ; in it all is order : the plants in their courses, the season as they roll, the gladness of returning spring, the cheerful glow of life-inspiring summer, the full fruition of the teeming autumn, the biting but purifying frost of winter, we know will succeed each other, because it has been so ordained by an all wise Providence.

From these natural phenomena mankind should learn practical lessons of order and regularity. No wise man embarks in any enterprise without first reducing his theories to a system and acting upon it in an orderly manner. He adopts the advice of the sage philosopher who said "Be sure you are right, then go ahead," which means "Do not go ahead until you are quite sure you are right, and then systematically and with due order." There is nothing gained by undue haste and getting into a scrimmage with one's work. Forceful, but at the same time, cool-headed people are the most successful ; those who do not rush in without first ascertaining whether the opportunity is favourable, but when they do begin, carry on their work energetically and with system and order, omitting no details which may appear to them of minor consequence, but really are most important, and with a determination not to fail through any neglect on their part ; keeping all their tools in their proper places and in good order, so that they shall be ready for immediate use when required, and never delaying to do the right thing

at the right time. And especially is this of importance to the man who has to do with the elements and the forces of nature, like the farmer and gardener, he must ever remember that Nature, being the child of Heaven, is always obeying the Divine law ; she never stands still and, to keep pace with her, we must promptly perform our parts. When seed time comes we must cast the seed into the earth in good season if we expect to reap an abundant harvest. We must also bear in mind that it is decreed that one creature shall prey upon another or upon vegetables suited to it, and that these creatures are, many of them, so minute as not to be visible until examined by the aid of a powerful microscope, and yet are most destructive to various crops upon which they feed, each in its kind, and which the cultivator has designed for his own profit and use. It will therefore be necessary for his own protection to adopt means to prevent their ravages, or destroy them, and that, promptly. So a man of order will study well how this may be accomplished, have all the necessary ingredients and appliances ready so that he can wage an orderly and systematic battle against the invaders of his turnip or potato crop, and not a mere scrimmage with the enemy, and that perhaps only after the damage has been done.

And when he has done his part as to cultivation and soil, and a rich harvest is promised, there is still a great necessity to observe order. If the crop is to be made the most of it must be harvested at the right time, not before it is ripe or after it has shed part of its grain or lost its nutritive qualities by being allowed to stand too long. The weather must be watched and every advantage taken of it when it is fine. Some persons are accounted to be more lucky than others in this respect, but if enquiries were made it would be found that their success was not to be attributed to luck but to good judgment and the prompt, careful and orderly way their business had been conducted.

The government of rational beings requires the establishment and strict observance of undeviating laws. Supposing no such beneficent law and order existed, or were not definite and precise, what would have been the effect ? There would be no encouragement for man to work if he could not calculate with some degree of certainty, that he should obtain the reward of his labours. The cultivator of the soil would not scatter the seed if

he did not confidently expect that the spring rains would moisten it, the summer sun warm it, and that, by these genial influences acting upon the earth, the seed would spring up and the crop, grow and ripen until the harvest would increase his store.

But, as a rule, his expectations are not disappointed because he has done his best and relies upon the laws of Nature to do the rest. It is true that drought, long continued, excessive cold, or storm and tempest, sometimes render the work of the most careful futile, but such visitations are the exception and not the rule.

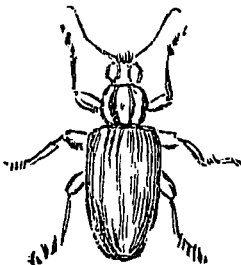
Were it not that the general law is impressed upon the seasons, the soil, and the seed, the husbandman, having no assured prospect of success, would cease to till and manure his soil, and his occupation would be gone. But, observing the exact universal order which the great Creator has established in His works, he labours with cheerful confidence in the future, and if he learns to be alike orderly and systematic he helps to crown the earth with plenty.

Let us remember then, and carry our knowledge into our daily tasks, that the laws of Nature are Heaven-born and that Order is Heavens first law.

GEO. MOORE.

INSECTS INJURIOUS TO VEGETATION.

THE PEA AND BEAN WEEVIL. (*Sitona lineatus*)



1. Natural size. 2. Magnified.

Slugs are often blamed for the damage done by weevils, being so small they are not easily seen

and fall to the ground when alarmed. The weevil eats the young shoots and leaves of the pea and bean plants, and its larvae devour the roots. It also attacks red clover in its early stages of growth, and its minute white maggots or larvae often eat the roots of a second crop and stop its developments. Trefoil and other legumes also suffer from it, and the injury is often attributed to slugs.

The pea and bean weevil is a quarter of an inch long, colour dark, covered with greyish scales, and lines of greenish grey, which gives it its name "lineata." The "tibiae" or fourth joints of the legs are curved and terminate with a small hook. Where the eggs are placed is uncertain. The larvae or maggots are white and without legs, nearly a quarter of an inch long and curved, they live in the roots of many leguminous plants, and there change to pupae, but it is well ascertained that some weevils pass the winter in their perfect form. A favourite resort of the torpid insect is the straw and stubble, and they are often carried in this condition into barns. They are most voracious, feeding by night and by day.

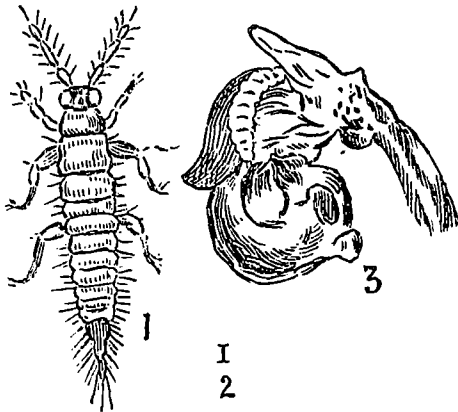
Prevention and Remedies.

When peas and beans are attacked, it would be desirable, in the first instance, to press the soil firmly about the plants, in order to prevent the beetles from coming up from the earth. Lime and soot or ashes dusted upon the plants when the dew is on them or after rain will have a good effect. A weak solution of coal oil and soft soap, sprayed over the crop, would render it distasteful. Burning of stubble, weeds and rubbish, is recommended as a means by which many insects secreted in them may be destroyed, and if rubbish is drawn to the compost heap it should never be reapplied to the land until it has been properly and thoroughly fermented. Infested clover ley should be deeply ploughed using a "skim" coultter to bury the surface slice. Summer fallowing of weevil infested land is very desirable.

THE PEA THIRPS. (*Thrips pisivora*).

This insect has been mistaken for the pea weevil (*Sitona lineatus*), but it is now proved to be quite distinct. The haulm is not affected but is fully developed and luxuriant, but flowers or perfect pods are wanting, or if flowers are formed they are imperfect and the pods, when they begun to form, are distorted, punctured by the thrips, and never produce any pease.

The insects seem to arrive just at the right time to arrest the healthy development of the flowers and pods. Thus they may be pea plants of average size good colour, and apparent health but utterly barren of pods, and, by a casual observer the reason could scarcely be discovered, as the thrips are so minute and appear too insignificant to cause so much mischief.



1. Thrips much magnified. 2. Line showing natural size. 3. Distorted pod.

They are not more than one twelfth of an inch long when full grown; they are about the same colour as the peas which makes it difficult to discover them. The female places eggs of microscopic size close to the midribs of the leaves from which the larvae come in seven or eight days, and at once begin to suck up the juices of the plant. There are many generations hatched during the summer. The insects pass the winter in their perfect state, either in the earth or in the bark of trees or other similar shelters.

Prevention.

Spray the haulms, while growing, with a mixture of 5 lbs of soft soap and the extract of 5 to 6 lbs of quassia chips to 100 gallons of water. Do not plant pease the following year on, or near land on which the crop has been infested.

ASPARAGUS.

(*Asparagus officinalis*).

There is no more delicious and wholesome vegetable, and the following lucid directions for its culture, taken from the *New Zealand Farmer* are well worth attention.

Asparagus is a native of the coast districts of

Europe and Asia. This fact accounts for the practice of applying salt to the beds. Expert opinions differ as to the best plan of growing asparagus, but this remark applies to all cultivation. A rich, sandy, alluvial soil with plenty of saline matter is the ideal asparagus ground. It is delicate, nutritious, and wholesome, and should be much more common than it is.

The situation must be well drained. We repeat this because all the books give it.

Preparation of the ground.—Double dig or trench the ground to a depth of 2 feet at least, or better still, 3 feet, at the same time working in as much stable manure as can be spared and a dressing of coarse bone dust. If the land is at all stiff, a quantity of short seaweed and sea sand with the manure is an improvement.

Raising the Plants.—The plants are better raised in separate seed-beds of light, rich, sandy soil. Sow the seed in spring. Sow in drills one foot apart and 1 inch deep. If sown in spring soak in tepid water for 10 or 12 hours before sowing. When the seed is well up, thin out the plants if too crowded, as they will require to remain in the seed-bed until the second year.

Making the Bed.—Narrow beds, say from three to five feet, are in every way preferable, and 18 inches at least should be left between the beds. The beds should be kept as low as possible because the yearly dressings will gradually raise them. In a five feet bed a row should be planted down the centre, and one at one foot from each side. The plants should be set one foot apart in the rows.

Buying Plants.—As it takes two seasons to raise plants, and one or two years more before cuttings can be made, those who desire to establish an asparagus bed would act wisely in buying well established two or three years old plants from a reliable nurseryman. These may be planted out in the prepared bed in May. In planting make the hole large enough and highest in the centre. Set the plant in the hole and spread the roots out all round. Cover the plants so that they will have three or four inches of rich soil above them. The bed should not be cut from the first season, and only moderately the second. After this, with judicious cutting and attention, the bed will yield well for many years.

Dressings and Cultivation.—Before the plants shoot in spring, the winter dressing of manure should be lightly forked over. During the growing

reason the beds are benefited by several dressings of salt, kainit, soot, and sulfate of ammonia, but don't overdo this. It is well to remember that 1 lb. of fertilizer on a bed 5 feet wide and 16 feet long is over 4 cwt. to the acre, which is a good dressing of any one concentrated manure. For a bed 16 feet by 5 feet, each dressing might consist of 1 lb. kainit and $\frac{1}{2}$ lb. of sulphate of ammonia. After the stems have turned yellow, and been cut down, the bed should be dressed with seaweed, manure, and superphosphate, and left for the winter. Of course, all weeds should be kept down, and on no account should the seed be allowed to fall. The worst weed in an asparagus bed is young asparagus. For good results, ample water is required in spring. Cutting should cease in summer, and the stems allowed to mature.

Ag. Gazette (Eng.)

The Dairy.

PASTURE AND SOILING

As soon as the spring grass gets high enough for the cows to get a bite, let them have it, for they are longing for it and clearly show it by their actions. It is not advisable perhaps, at first to allow them on pasture all day long, for the good of both pasture and cow. Cows should be quite gradually changed from stable feeding to pasturage, especially if the feeding has been of dry material or mostly so; but where ensilage is used the difference in feed is not nearly so pronounced. The stable feeding should continue unchanged, undiminished, until the cow herself indicates that she is getting enough grass to replace a part of the stable ration. Then, as the pasturage increases and improves, indoor feeding may be lessened and finally discontinued. If a pasture furnishes an abundance and variety of grasses, there can be no better food found for the milch cow, indeed it is truly a perfect food. Analysts have determined that the nutritive ratio for mixed pasturage is about 1 to 5, which cannot be improved for succulent food. But as the best of pasture grasses contain from 65 to 75 per cent of water, sometimes more, the cow must procure a large quantity of this material, 100 pounds or so in the course of a day, to secure the food material required. Shade and water should be carefully looked after

in connection with pasturage, as well as the grass, in very large pastures there should be watering places in different parts of the inclosure, as well as shade, so that the cows may not be compelled to travel far to find either.

Cows can be kept most advantageously in the pasture during the day time and the stable at night, or be left out all the time, until flies and heat become troublesome. But in the worst fly time, and perhaps when the sun's heat is greatest, it is good practice to stable the herd during the day in an airy but shaded cow house, and turn it on pasture at night. If the pasture has not abundant shade and water this course should certainly be followed. Heat and flies reduce both quality and quantity of milk product.

The trouble from flies can be largely remedied spraying the cows with a very weak mixture of water and some one of the approved sheep dip preparations. Such a spraying will last a week or ten days, unless there are hard rains meanwhile. The entire interior of the cow-house should be sprayed with a solution of this kind, and strong enough for an insecticide, weekly throughout the summer.

There seems to be ample evidence that, although milk may be increased by feeding grain to cows at pasture, the grain no more than pays for the extra food, and seldom does that. There may be in some cases a small margin for profit in improving the pastures by less grazing and richer manure. But if pasturage is short, even temporarily deficient, the cows should be fed enough of grain, hay, silage, or green crops to supply the deficiency. The dairyman who has most of his cows dry during drought, fly time, and "dog-days" appreciates the advantages of "bringing in" his cows in the fall.

There is no doubt that the advantages of soiling over pasturage are so great, especially when dairying on high-priced land, that every dairyman should carefully study the question of adopting this system. Much of course depends upon the supply, character, and cost of labor at one's command. It may be profitable to practise partial soiling where it will not be to do more. Careful trials have shown that by feeding cows wholly on green forage crops in the stable, from two to five times as much milk can be produced from an acre as from pasturing the same land. Of course, farms often contain many acres of pasture land that cannot be tilled, but for tillable

land the profit in soiling is great. Many more cows can be kept on a given area and the productive capacity of the land can be rapidly increased. The saving of manure and its application to best advantage is one of the great gains in soiling. For this system of feeding stock a variety of green crops is necessary, grown so as to come to best feeding condition in well arranged succession throughout the growing season. There must be no breaks; the supply must be certain and sufficient. It is just as well to aim to grow about twice as much of every crop as one expects to use; any surplus can be saved by drying or putting in a silo. Crops well adapted to soiling in most parts of the country are these:

Oats, spring barley, and peas, sown early in the spring; vetches, also corn and bean, planted or sown in May; cowpeas, corn, millets, and Hungarian grass, sown in June—these for cutting in the Summer and Fall. The first and second crops from the regular mowing lands of grass and clover will fill in the gaps.

A good deal of skillful management is needed to bring on the crops at the right time in proper succession and in sufficient quantity. At least 110 pounds of green forage should be provided daily, on the average, for every 1,000 pounds weight of cow; the quantity will vary much with the character of crop. By the soiling system, well managed, one acre may feed two cows for five or six months, and three acres for five cows is a conservative estimate.

One of the points of gain by soiling is saving the food expended by the animal in its exertion to procure its food at pasture.

But moderate exercise should accompany soiling, and a small pasture lot or large paddock should be provided convenient to the cow house for use of the herd, especially at night.

H. WESTON PARRY.

TURNIPS FOR MILK PRODUCTION

ED. HOARD'S DAIRYMAN:—Sitting down to dinner at the Russel House, Charlottetown, during the Fruit Growers' Meeting last week, Hon. Joseph Wise, Milton, referring to a handsome sample of butter on the table said to me: "Mr. McDonald, taste that butter, see if you can detect any turnip flavor." I tasted it and replied that I could not detect any turnip flavor. Mr. Wise

then asked Mr. Lavehlin McDonald, manager of the East Point Dairying Association to try it. He did and said that he could not detect any turnip flavor and added: "Although I cannot taste any turnip flavor in this butter, yet a more expert buyer might." Mr. Wise then asked Mr. Scrimgeur, of Cardigan, to taste it. Mr. Scrimgeur did so and replied: "I cannot taste any turnip flavor in this butter. No, the cows from which this butter was made, could not have been fed any turnips, or if they have, it has not had any effect on the butter." "Well, then," Hon. Mr. Wise said, "The cows from which this butter was made, are eating ninety pounds turnips a day." This was certainly a surprise to the whole of us. "Yes," Mr. Wise said, "I brought in that butter this morning, and I feed my cows a half bushel basketful three times a day."

The subject then drifted on feeding turnips to dairy cows. Mr. Scrimgeur said that he feeds turnips to his cows right along and that there is no more profitable crop for the Prince Edward Island farmer to grow than Swedish turnips. Not only for dairy cows but swine, sheep and fattening steers also. He said he was now fattening twenty-five hogs; the bulk of the feed was Swedish turnips. He, however, qualified his remarks about feeding turnips to dairy cows, saying that he always fed them after milking, and that he fed a bushel a day in two feeds, morning and evening. Mr. Wise said that he would not risk to feed turnips before or just at milking, but always after milking. He also fed a basketful at noon. He found, too, that straw, and preferably wheat straw, was just as good as hay to feed with turnips. He would just as soon have good, bright straw as common hay. He never depended on straw and turnips, however, for his dairy, but always fed a gallon of crushed grain a day in addition to the ninety pounds turnips and straw *ad libitum*.

Mr. Scrimgeur did not feed grain to his cows, but much preferred hay to straw with Swede turnips. Mr. McDonald, like all factory men, was quite shy of turnips and always fed them sparingly, making it a point to feed just after milking. Mr. McDonald is the largest patron of the factory of which he is manager. He said he raised large quantities of turnips every year, raising corn enough only sufficient for fall forage, but he could not realize how Mr. Wise was feeding 90 lbs. turnips to his milk cow a day. Yet here was

the product of those cows right before him in beautiful, golden, sweet tasting butter.

It was certainly a surprise to us all that a cow could be fed 90 lbs. turnips a day and yet produce sweet flavored butter. For the benefit of your readers in the Maritime Provinces I place Mr. Wise's ration in analytical formula :

	Dry Matter.	Digestible Nutrients		
		Protein.	Carbohy-Drates	Ether Extract
15 lbs. straw.....	1.5	.18	6.	.0
90 lbs. Swede turnips..	10.	1.	8.	.2
5 lbs chop.....	4.5	.43	3.2	.1
Total.....	29.0	1.51	17.2	.3

It will be seen that the above ration is quite at variance with Wolff's standard, yet Mr. Wise affirms that he finds this ration satisfactory. I do not think any of our authorities on feeding have experimented with turnips very much, as the chief portion of the ration, and while most of them do not recommend feeding more (yourself included) than about 25 lbs. per day, yet no extended experiments have been made in feeding animals, especially dairy cows, when the ration of turnips amounts to a bushel a day, or more.

We agree that a warm stable is essential to feeding turnips largely, so much water has to be evaporated. Why, Mr. Lester an old Scotch gentleman who lived near me in the '60s, tried to make it a rule to feed two bushels of turnips a day to his fattening steers, that is, 120 lbs. a day. Mr. Lester always preferred feeding straw to the best clover hay, in conjunction with $\frac{1}{2}$ turnips, to his steers.

I find, upon inquiry, that most of the dairy-men in Prince Edward Island grow very large averages of turnips and scarcely any corn—only a little for fall feeding. It is not unusual to see dairy-men milking twelve cows, growing eight acres of turnips, and there are a few large dairy-men who grow these extensively—one man in particular whom I know, grew thirty acres of turnips last year.

While attending some of the meetings in the last few weeks, I found very few farmers who are feeding hay to their cows there. One man, where I stayed, took me to his cow barn; the cows were all lying down (at noon) in about six inches of straw, and before them in the mangers was quite a quantity of uneaten straw.

"Do you think," I asked, "it is a good plan to have so much straw before them as that?"

Mr. T. replied that he was just going to take that away from them as the cows, he thought, were about through with it, and shake it under them. His plan, he said, was to give his cow about double the quantity they would eat, and after the cows picked over the best of it and were satisfied, to take the refuse and shake it under them, making a warm, soft bed for the cows to lay upon, while all the liquids would be absorbed by the large quantity of straw thrown in the gutters and stalls.

This man said he fed no grain to his cows, simply turnips and straw. Mr. T. had a large silo, before his cows, built three years ago, which was never filled with corn but the first year; for the last two years he has filled the silo with turnips. "Do you expect to put corn in that silo again?" I asked. "No," he replied, "I do not. Turnips are a surer crop, and you can grow twice the quantity to the acre." "Don't you have trouble with turnip flavor?" "No, I never had any complaints from the factory about turnip trouble. I feed turnips to my cows from early fall right through till spring, about a bushel a day. I always, however, take the precaution to feed them just after milking." (1)

Prince Edward Island.

J. A. M.

CHEDDAR CHEESE

(Continued).

On June 16th the experiment was repeated. The following is the composition of the two milks on that day:—

In order to give this abnormal milk every chance, one quart of stale whey was added to ripen it, and 50 per cent, more rennet than for the ordinary milk. The result was better, but the yield of curd was only $7\frac{1}{2}$ lbs. from 9 gallons and 1 quart of milk.

The whey did not contain such an excess of fat as on the former occasion, so that the small yield of curd was not due to loss in the whey. But there is one striking peculiarity of the curd of these two cheeses; whereas the abnormal milk curd on the 8th June contained 44.90 per cent. moisture, and on the 16th June 44.80 per cent.,

(1) Precisely what we advised, and practised, many years ago. Of course, the Devonshire mode of butter-making is a great aid to getting rid of any possible bad flavour. Ed. J. of Ag.

	Solids.	Fat.	Casein.
Abnormal Milk.....	10 74	2 50	1 95
Remainder of the Milk.....	12 54	3 59	2 52

the curd from the remainder of the milk contained on the 8th June only 40.90 per cent., and on the 16th, 42.30 per cent. moisture.

These experiments, coupled with the abnormal composition of the milk, convinced me that, to some extent, the disadvantages which has been met with at Fenswood Farm were due to this source. These four cows gave milk in which all the peculiarities of the Long Ashton milk were concentrated—milk of low acidity and a small percentage of casein, yielding curd which contained an excess of moisture, and a whey which contained an excess of fat, unless special precautions were taken to prevent this fat passing into the whey. Hence, at my request, three of the cows were disposed of. The fourth was kept for rearing calves, and none of her milk was allowed to be sent into the dairy.

All four of these cows has been in the dairy during 1897, two having been bought that year for the purpose of obtaining the quantity of milk required for the School. The other two had been in the herd for some years past, having been bred by Mr. Harding. There was no sign of any disease or peculiarity in these cows. In fact, to all appearance they were as good cows as any in the herd, and their yield of milk, as shown in the table on p. 73, was up to the average. The one kept reared two calves well. The three cows which were disposed of had gone to a butter-maker.

Unchurnable cream.—This butter-maker was surprised to find, after the introduction of these cows into the herd, considerable difficulty in churning the cream, which became so troublesome that the three newly acquired cows were suspected, and upon attempting to churn the cream from the milk of these cows separately, it was found almost impossible. The result was that the butter-making from this milk had to be given up, and the cows fattened for the butcher. I am of opinion that this abnormal milk is a peculiarity of certain strains of cattle, and I base this opinion

not merely on the fact that no special cause could be found for the production of this milk, but because I have, from time to time, come across other cows in different parts of the country yielding similarly abnormal milk, and have not in a single instance been able to trace its origin to disease.

Practical results.—The practical results are important. It is evident that if cheese-makers find exceptional difficulties in making cheese, they will have to consider how far these difficulties may be due perchance to one or more cows yielding abnormal milk. The way in which dairy farmers are in habit of replenishing their herds with cows, the past history of which they know nothing whatever about is most indiscreet. In addition to the risk which farmers run of introducing disease into the herd by this system, it is now evident that they run a further risk of purchasing cows whose milk may materially deteriorate the produce of those which they previously possessed. (1)

The effect of different pastures on the quality of milk.

This subject of inquiry is one which presents considerable difficulties, and results obtained in any one year must not for one moment be expected to apply to all seasons, nor those obtained in one place to be applicable to others. Moreover, to satisfactorily investigate such a subject almost ideal conditions are requisite, and these have not existed at any site of the Cheese School. The conditions most suitable existed in 1891, at Vallis, where the fields were larger and the animals upon the same pasture longer than at any subsequent site of the Cheese School. But even at Vallis Farm keep was short, and the cows could not be left upon the same field or fields for any length of time. In order, however, to see whether any

(1) At no former Cheese School had the milk of each cow been analysed, so that it is not possible to say whether abnormal cows were present in other herds, nor how far other difficulties in cheese-making may be due to such source.

FALLING OFF IN MILK YIELD DUE TO TIME SINCE CALVING.

Loss at the end of	Average falling of in, gallons.	Proportion approximately	If proportion exact, gallons.
1 month.....	19	One-eighth = $\frac{1}{8}$	18
2 "	33	Two eighths = $\frac{1}{4}$	36
3 "	51	Three eighths = $\frac{3}{8}$	54
4 "	71	Four eighths = $\frac{1}{2}$	72

information upon this difficult question could be gathered, the following table was drawn up, showing the average percentage of the chief constituents of milk produced upon the various fields during each month, also stating the number of days' milk which these averages represent. The results are interesting, but they do not warrant any hard-and-fast conclusions being drawn therefrom.

1. It will at first sight be noticed that the milk improves in quality each month upon all the fields.

2. It will next be noticed that the milk produced in August on the Leaze and Stevens is superior in solids and fat, and inferior in casein, to that produced on the Summer Leaze and Leaze, and that the same result is obtained in September. This might have been accidental, but curiously enough the milk produced upon the Front and the Leaze is superior in both solids, fat, and casein, to that produced upon the Oxen Leaze and Leaze, or upon the Mixed Fields during August, while the same relative superiority is maintained throughout both September and October. This comparison might be carried further, but sufficient has been pointed out to show that in this distance there would appear to be a fluctuation in the constituents of the milk depending upon the pastures, which is independent of that fluctuation in quality due to season, or the prolongation of the time the cows have been in milk.

There are some minor subjects arising out of this table of averages, one of which is of considerable interest. There are few, if any, continuous series of analyses of milk in which the percentage of casein has been determined; the result is, that a somewhat new and important fact is revealed regarding the fluctuations of this constituent. It

will be noticed that the casein is affected both by the time of the year and by the nature of the pasture, though it is only to a slight extent as compared with the variations in the fat.

Summary of results.

From the preceding facts it would appear that *quantity* of milk depends mainly upon succulent food. Thus, where the conditions are favourable to the production of abundant grass, be those conditions local or climatic, the maximum milk yield has been obtained.

The *quality* of milk appears to depend upon far more numerous factors. The cattle themselves, and the nutriment in their food, are the primary causes of fluctuation. But it will be seen that the nutriment in the food depends not only upon the character of the soil but also upon climatic conditions. Moreover, the milk will vary in quality not only in a general way, by at times containing more solid matters than at other times, but there is distinct evidence that the constituents of these solids also vary according to the food of the cows.

The volume of morning's and evening's milk.

During the whole period of these observations, the volume of morning's milk has always been greater than that of the evening's. The maximum variation is in the month of October, the smallest variation is in the month of July. The volume of the morning's milk in April is one-fifth more than that of the evening's; in May it is one-sixth, in June one-eighth, in July one-twentieth, in August one-eighth, in September one-fifth, and in October one-fourth. Hence the relative increase is greatest in October, and next in April and September.

These facts are not difficult to explain. In July the work of harvest keeps the farm hands busy until late in the evening and the evening's milk is brought into the dairy later in that month than during any other part of the year. Thus the time which elapses between the two milkings is more equal than during any other month. On the other hand, in October, the dark mornings make the milking later than usual, while the drawing in of the day causes the milking to be done earlier in the evening, so that the time which elapses between the two milkings is most uneven. Thus it would appear that the morning's milk is more than the evening's mainly owing to the longer time which has elapsed since the last milking, in other words, the animal has had a longer time in which to produce the milk.

Decline in the milk yield due to the time which has elapsed since calving.

It appears from the results of these observations that cows which calve in the month of March and April come to the flush of their milk yield about one month or six weeks after calving, and maintain this flush for about four to six weeks. After this period there is a decline in the quantity of milk yielded.

Is there any definite proportion in this falling-off in the milk yield? Take the highest average daily yield (146 gallons in June) as the maximum from which the decline commences. The falling off during the month of July amounts to 19 gallons, in August to 14, in September to 18, and in October to 25. Thus the decline for each month is about one-eighth the maximum yield. The following table shows this very clearly.

The annual milk yield of Somerset cows.

As the observations were carried on each year for only seven months of the milking period it is not possible to state with certainty what is the actual yield of the cows at each farm. I have, however, attempted to estimate this yield in the following manner. In the tables, p. 81-85, the average yield per head per day is given; by multiplying this by the number of days in each month we obtain the total monthly yield, from which the total yield for seven months is easily obtained. The yield during the remaining three months must be estimated. I have done this by assuming that the loss each month would be only one-tenth of the maximum yield. The results thus obtained are as follows:—

Year.	Actual Yield, 7 months.	Estimated Yield, 10 months.
	Gallons.	Gallons.
1891.....	426	473
1892.....	443	501
1893.....	492	550
1894.....	511	568
1895.....	461	503
1896.....	464	500
1897.....	474	564
1898.....	453	507

If, as these results would justify one in assuming, the average yield of milk per cow is only about 500 gallons, it is evident that considerable improvement is not only possible, but highly desirable, and could probably be brought about at no very great expense by greater care in breeding.

(To be continued).

The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES).

KAFFIR CORN. (1)

(Continued from page 17).

According to promise, I take up the above subject, having received a bulletin issued by the Kansas State Agricultural College Experiment. While it does not appear to say very much about experimental work about poultry yet as I have already stated several parties in the United States have tried it with much success. I feel justified in giving the readers of this JOURNAL as much of its contents as possible and hope that they who do grow their own grain for their fowls might find some knowledge of the varieties, qualities, and culture of Kaffir corn that will prove useful to them. The report begins with the statement that while in 1893 only 46,911 acres were planted in the State, in 1899 the acreage had increased to 582,895; continuing, it says: Kaffir corn belongs to the group of sorghums that contain but little sugar. The plants grow erect, with thick, short jointed stalks bearing broad, deep green leaves. The plants average from four and a half to six feet in height.

(1) Will it suit this climate? Ed. J. of Ag.

The heads are compact, stand erect, and average from ten to fifteen inches in length.

Kaffir corn is raised both as a grain and as a hay crop. Its greatest value is for grain.

It has been raised on the Kansas Agricultural College farm for eleven years. We recommend two varieties: the red and the black hulled white. For the past seven years we raised red. The black hulled white was then tested and from 1896 to 1898 the two varieties were grown side by side, the red giving an average yearly yield of thirty-seven bushels per acre, and the black hulled white forty-three bushels per acre.

We now raise the black hulled white. In Western Kansas many farmers raise the red, thinking it a little more hardy and earlier. In Central Kansas some of our feeders raise both the red and the black hulled white and feed alternately, the stock seeming to relish the change.

Our records show the red to be from a week to ten days earlier than the black hulled white, but this difference is of but little importance in Central Kansas.

Kaffir corn planted on the College farm the middle of May is ripe in the middle of September. Kaffir-corn heads, vary considerably in form and compactness, we prefer seed from long, closely compacted heads. It is best to save Kaffir corn intended for seed in the heads until planted, and the heads should either be hung up separately, or else be loosely piled and kept dry and well aired. When threshed and stored in large quantities, Kaffir corn will heat sufficiently in damp weather to destroy the germinating power of the seed. Poor stands are common every year all over the State from this cause. Kaffir corn is a warm weather plant, and makes slow early growth and should not be planted until the ground becomes warm. We usually plant immediately after corn planting is done. Nothing is gained by earlier planting. Planted too early, the stand of Kaffir corn is frequently so poor that a late replanting is necessary, and if a good stand is secured the growth of young plants is so slow that the weeds forge ahead and extra cultivation is necessary.

On cold soils and on soils that wash surface planting is best. Plow the ground—in the fall, if practicable—thoroughly pulverize just before planting, and plant in rows three to three and one half feet apart dropping single seeds an inch apart in the row. Plant about the same depth as wheat.

We plant Kaffir corn with a grain drill, stopping all but two holes, using a bushel of seed to each five acres. The seed weighs fifty-six pounds to the bushel.

Kaffir corn may also be planted with either a one-horse corn-drill or a two horse corn-planter with drill attachment. With either of these machines dropping plates must be used that are drilled to drop Kaffir corn at the proper distance.

On warm soils and a late planting listed Kaffir corn does well, the only difficulty being that a heavy rain before the plants come up, or while they are small, fills the furrows with soil and ruin the stand. Whatever method of planting is used, the weeds should be killed and a mellow seed bed provided just before the Kaffir corn is planted. The ground should be compacted round the seed to insure quick starting.

In 1898 heavy floods destroyed hundreds of acres of wheat and corn on bottom land in Eastern Kansas. These floods came too late for the replanting of the lands with corn. We advised using red Kaffir corn, and many farmers who accepted our advice secured good crops. Cultivate Kaffir corn the same as you would corn for a good yield. We give level culture, and prefer the two-horse cultivator with four small shovels attached to each beam.

Most farmers use the cultivator with two broad shovels to each beam.

After the Kaffir corn has reached a foot in height the shovels should be run shallow as the roots soon extend from row to row.

When grain and fodder are both wanted, Kaffir corn should be cut when the seeds are ripe and put in a large shocks.

Threshed Kaffir corn stored in bins is liable to heat badly in damp weather. No way of avoiding this has been found.

We are often asked how the yield of Kaffir corn compares with that of red corn, Jerusalem corn, and milo maize.

Three years test, at this station indicate that Kaffir corn was the superior variety for grain, and other varieties were dropped. The yield in bushels per acre for these three was as follows:

	1889	1890	1891
Red Kaffir corn	71.0 bus.	19.0 bus.	98.0 bus.
Rici corn	0.0 bus.	16.5 bus.	61.0 bus.
Jerusalem corn	(destroyed by birds all years)		
Milo maize	57.0 bus.	2.2 bus.	0.0 bus.

The English sparrow destroys the heads of Rici corn and the Jerusalem corn on the college farm before the seeds become ripe. In the treeless sections of the western part of the State the sparrows do not bother these varieties, and they are good grain yielders but yield little fodder. Milo maize does well on the college farm in a long season, but in two years out of the three was cut off by the frost.

Kaffir corn stands the drought better than corn. It will continue to extract moisture from the ground and grow after the ground has become so dry that corn has become momentarily checked. When finally the ground becomes so dry that the Kaffir corn can grow no longer it remains stationary and if the late rains come starts to growing again as though nothing had happened. Corn under the same conditions dies. Frequently in Kansas the corn crop is small because although the rain fall is sufficient and the stalks are vigorous though the season, a few days of hot winds at tasseling time kills the pollen and the kernels of corn do not form. Kaffir corn is not affected in this way.

The thick short jointed stalk of Kaffir corn enables it to withstand strong winds much better than either corn or the sweet sorghums.

Kaffir corn has strong feeding powers and heavy root development, especially adapting it to poor soils. It will produce a good yield of grain in poor land and on uplands where corn will fail except in favorable years.

Kaffir corn is not proof against chinch-bugs. and chinch-bugs when very thick will kill it, but an ordinary attack such as will seriously injure corn does not seem to hurt Kaffir corn much. When only a few inches high Kaffir corn is readily destroyed by this pest.

Objections to Kaffir corn

Like all sorghums, Kaffir corn makes a weak, slow early growth, which is in strong contrast to its vigor and hardiness after becoming a foot high. In damp ground, in wet seasons and on weedy land, the weeds in the early season will often make a strong growth while the Kaffir corn is too small to cultivate easily. This makes cultivation expensive and difficult.

When fed alone, stock tire of Kaffir corn much more quickly than they do of corn. Some stockmen feed red and white Kaffir alternately. This gives some variety, but only partially overcomes the defect. When Kaffir-corn is fed with feeds

rich in protein, as alfalfa, soy beans, bran, or oil-meal, animal relish it for any length of feeding period. This lack of protein (flesh and blood forming material) and an excess of starch and other heating substances makes Kaffir corn an undesirable feed to be given alone, but combined with the other drought resisting feeds—alfalfa and soy beans—makes a ration containing all the material, in proper proportions, needed for meat and milk productions and the growth of young stock.

Kaffir corn is a very constipating feed, and for this reason, when fed alone to either horses, cattle, or hogs, induces an unhealthful condition. Alfalfa and soy beans are laxative, and either fed with Kaffir corn secures a healthy condition of the animal.

In fattening hogs the best results (greatest gain on least food) were obtained when Kaffir corn meal and soy-bean meal were used in the proportions of four parts of the former to one of the latter. Kaffir corn has not been found better than corn, or cheaper bushel for bushel, but it has been found that especially on light land and in dry seasons, acre for acre, Kaffir corn is the more profitable crop.

No doubt there are many limited localities outside of the so-called arid regions where this crop could be grown to advantage for poultry. The fact that it is better than corn to combine with some of the by-products available in different localities would seem to make it worth while for poultrymen in those localities to test it. We had an inquiry not long ago from a subscriber who could get refuse beans very cheap. Kaffir corn, if to be had at a reasonable price in his locality might be the best grain he could get to use with beans. If he is in position to crown his own grain it might be a profitable crop for him. Where the by-products of cotton seed are abundant and cheap, Kaffir corn it would seem, could be used to better advantage than any of the more common grains.

What the Kansas bulletin tells of it is enough to incite poultrymen to test it as a food and experiment with it as a crop.

I shall be glad to hear from any or all of the readers of the JOURNAL who will try the experiment of raising this corn but as a forage crop and for grain for feeding to poultry and give me the results of such experiments (*pro bono publico*). I

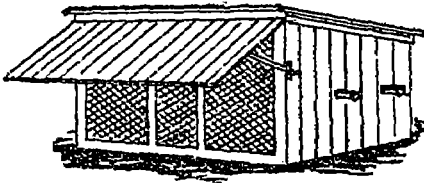
shall continue to get information from other quarters and will keep it before our readers.

Faithfully yours,

S. J. ANDRES.

A COLONY COOP.

Through the courtesy of a friend I am enabled to present an illustration of a coop which I believe will prove acceptable to our readers. It is one which he has used with great satisfaction. He says, in describing it: "Having successfully conducted our chicks through all the dangers and perils of chickenhood and through the cold months of early spring, we give them their liberty in the sunny months of May and June, fully assured that they have secured a physical training that will enable them to take care of themselves. This is a good time to separate the sexes, as soon as the cockerels can be picked out, and the flocks made up into 25 for each coop which I



The movable coop.

think is a good plan." He gives the dimensions as follows. "The dimensions are 3 feet 6 inches wide, 6 feet long, 1 foot 10 inches high at back, and 2 feet 10 inches in front. It is made of seven eighths inch matched boards throughout. The end boards are nailed on to 1 by 3 inches ledges, the top one being outside to give better nailing for roof-boards. The boards at back are lengthways, nailed in the boards of ends. The front is a frame of 1 by 3 inches, covered with one inch mesh netting, the center portion being a sliding door. The front is nailed on to the ends and the roof boards are nailed on to the top edge of the back and front. We always paint the tongues and grooves of the boards as we put them together to prevent the wet soaking in and rotting the tongue.

The novel feature about this coop is the front shutter. This is made of half-inch matched boards, fixed on two ledges of 1 by 3 inches and hinged at the top so it will hang down and nearly

close up the front. However, we never put the shutter down after the first of May. It is fitted with iron stays at each end to hold the shutter fast in the position illustrated. This enables the chicks to get fresh, pure air day and night, and at the same time they are perfectly protected from driving rains. In the day-time it forms a shelter under which the chicks run in the event of rain, and later on, when the sun becomes too hot, it is equally useful as a shade. On naturally dry land, the ground is always dry enough for the chicks to sleep on. We use 2 by 3 inch perches, laid flat, the upper edges slightly rounded off. A great deal of nonsense has been written about early perching and crooked breasts. Let a chick perch on a 3 inch scantling just as early as it will—the earlier the better. Its toes are no more contracted than if on the floor. If you fix a "broomstick" for a perch and expect perfect breasts you will be disappointed. We mortise holes through the boards of ends and slide the perches in, leaving enough protection for handles at each end to facilitate the moving. For carrying the coop to any distance it requires two persons, but for the daily moves a small boy can do it, one end at a time.

If used on a clay farm you should have a separate boarded floor to keep the chicks out of the wet in a rainy season, until such time as they all perch. Make the floor of half-inch matched-boards nailed down to 1 by 3 inch cleats. Have the floor fit inside the four walls of the coop and the cleats just so the back and front rest on them. If used regularly, we would hinge it at the back and fasten the front by two hook-hasps. If only used occasionally, hook hasps on both the back and front, so that it is quite detachable. With the dally move the house should be tilted over on the back and the floor scraped with a hoe. This floor should be used only when the ground is absolutely wet. The bottomless coop is the correct thing from both an economic and a hygienic point of view."

I have given in former articles other coops in which I have suggested that they might be made in sections so as to be taken apart easily and stored away during winter. And I think this it can be made up in the same way, as well as subject to any change that each individual may choose to make for his own purposes; but in the main, I think that it will prove all that is needed for small flocks or colonies of chicks that one does not wish to put into large enclo-

tures. I think a good plan would be to paint each coop used for each family in a different color which can be done cheaply by using the Asbestine paint which may be mixed with water. As it is made in several different colors and is very durable and easily applied, I presume it can be bought from your hardware dealer. I have seen it in use in the vicinity of Montreal where it had been put on by a farmer on a new house and had been in use two years and I am told is still in perfect order.

S. J. ANDRES.

The Flock

SHEEP RAISING UP THE GATINEAU

Farm of Messrs. Martin & Murrill

Visited by a Journal Reporter. Two hundred sheep kept last fall. How they were wintered. Animals are very easily kept. They require little care.

Five miles northwest of Chelsea in among the Gatineau hills—lies a sheep farm.

The "M. & M. ranch, as it is sometimes called from the fact that it is owned by Messrs. D. A. Martin and Milton A. Merrill, of Ottawa, although still only in its infancy, bids fair to be a first step towards the opening up, in this part of the Ottawa Valley, of an important branch of farming.

Situated, as it is, among a number of well-cleared high hills, which make almost ideal pasture land for sheep, the farm is in every way admirably adapted for its purposes.

Some time ago Messrs Martin and Merrill, having become convinced that if properly handled, there was money in sheep raising in this section of the country, they determined to make a venture in that direction. The Gatineau hills they decided would be the district in which they should make their first effort. Sheep are noted climbers and grazers and find no difficulty in making a living where no other farm animal could possibly thrive. On that account many of the Gatineau hills and mountains, when once cleared of brush, although suitable for no other purposes still afford first-class pasturage for sheep. Such land is also always cheap.

These facts were all apparent to Messrs. Martin and Merrill, when a little over a year ago they bought the farm of Mr. James Russell (one corner

of which borders on Meach Lake), and made their first start in sheep raising.

THE FARM.

The farm is a large one containing in all some 350 acres. It is a mile long, by half a mile wide. Some 16 acres have been cleared and are used exclusively as pasture land for the sheep. One hundred and fifty acres covered with light brush are also suitable for sheep grazing. A creek runs across the farm.

Having heard of the farm, a Journal representative recently paid it a visit. Neither Mr. Martin or Mr. Merrill were present, but Mr. Geo. Watterson, the farm foreman, took charge of the newspaper man and kindly supplied all possible information.

NUMBER OF SHEEP.

"How many sheep have you got altogether?" was the first question asked by The Journal man. "Just now," replied Mr. Watterson, "we have only about 142 head, including some 20 lambs. Last fall, however, we had more as we started the winter with 200 head."

"Where," was the next question, "did Messrs. Martin and Merrill secure all their stock?"

"By buying on all sides," was the reply. "When they bought the farm from Mr. Russell a little over a year ago, they secured 36 head of sheep along with it. During the summer also Mr. Martin went around the country and bought stock wherever he could. The sheep he bought were forwarded to the farm and put on pasture until finally there was a flock here of some 200 in all. In addition to the sheep some 35 head of cattle were bought at the same time."

"Do not the sheep and cattle raising conflict?"

"No," said Mr. Watterson, "we find the cattle always prefer to stay down on the low land and graze along the banks of the stream, where the grass is long, while the sheep on the other hand, stay up on the hills."

"How late in the season," asked The Journal, "were you able to keep them out on pasture?"

"Until," was the reply, "well on in November. We then put them all, with the exception of a few head, into a big pen in the shed. During the greater part of the winter they were allowed to run out in the yard in the day time, as they can stand almost any amount of cold. On stormy days, however, we shut them in the pen. The other sheep were kept separate."

FEEDING.

"How did you feed them?"

"In one part of the barn we have a feed room where their food was prepared. Down the centre of the shed in which the sheep are kept is a long rack. The sheep are able to get around the rack and get the feed out by putting their heads in between upright sticks. Down the centre of the rack is a narrow platform, along which a man can walk with a wheelbarrow. The feed is prepared in the feed room, loaded in the wheelbarrow, and the man runs it along the walk, throwing the feed off into the rack on either side as he goes. In this way, one man is able to feed them all.

"Did you find much labor was required to look after such a large flock?"

"No," said Mr. Watterson, "very little was needed. It only took one man to look after them all, including the feeding. Once a week, however, we had to have six or seven men for a few hours to help cut up the feed."

"What did you feed them on?" was next asked.

"Cut hay, straw and provender was all that was given to the main flock. A special lot of about forty which it was intended to fatten for slaughter, were fed on roots and cabbages in addition."

"When did you sell the stock that was disposed of?"

"We were selling a few head at a time all winter," replied Mr. Watterson. "The young rams were the ones we sold. They were bought up by the drovers and butchers who passed through the neighborhood. Occasionally a load or so was taken to the city and sold there. We kept selling off stock in this way right up to last May. Now we have only 142 head left."

"Have you done any shearing yet?" was the next question.

"Yes," replied Mr. Watterson, "we started shearing on the 24th May. We used machinery and managed to shear about 30 in a day. Had we been acquainted with the machine we could have done a great deal faster work. In all we secured 118 fleeces, averaging about 5 pounds each. This is still stored, as we have not tried to sell it yet."

"What do you intend to do with your old ewes?"

"They," said Mr. Watterson, "will be sold off this fall and replaced with younger and better

stock. The firm has a thoroughbred Shropshire and one or two other good rams for breeding from. Next winter Mr. Martin and Mr. Merrill intend to winter a smaller flock, but of better breeding. It is also intended to feed them more roots. With that idea some four acres of land is now under roots. In addition to that 40 acres is growing grain, 10 acres corn, 4 or 5 acres hay and 4 acres potatoes. We believe the sheep will thrive better if their diet is more varied."

SUMMER PASTURAGE

"How do you pasture them in the summer?"

"We have three separate fields," said Mr. Watterson. "The flock as soon as it has cropped down one, is turned into the next and from that to the third. In that way they constantly have fresh pasturage."

"Do you find," asked the Journal, "that their close cropping injures the land?"

"No," was the reply, "I cannot say that I do. As soon as they are taken out of a field, the grass grows up again as thick as ever."

DOG NUISANCE.

"In many districts," said the Journal, "it is found impossible to keep sheep owing to the dogs killing them. Have you had any trouble that way?"

"No, I am glad to say we have not. The farms here are so far apart that the neighbor's dogs are unable to get together. Dogs never kill sheep unless two or more of them are together and that, we think, is how we have escaped."

"Another point," said Mr. Watterson, "which I don't know whether you have noticed, is that we have nearly all wire fences. We use the Page wire fence, preferring it as it has no barbs. The sheep, therefore, do not tear their wool or injure themselves on it."

RAPE.

"This year we are trying an experiment with rape. Some two acres have been sown. If we find the sheep like it, we shall grow more next year. It is a feed that is being highly recommended by sheep raisers." (1)

"Have you suffered any loss through sheep dying?" asked the Journal.

"No" was the reply, "none to speak of. A few old sheep died last winter, but that was all."

(1) Rather late in the day to try "if sheep like rape."
Ed. J. of A.

"How many head will you carry over next winter?" was asked.

"Only about a hundred," was the reply. "Last winter we found the sheep were crowded, especially at the lambing season. We believe they will do better this winter if not so crowded."

Before leaving, the Journal man was kindly shown over a portion of the farm by Mr Watter-son. As Messrs. Martin and Merrill have only been started in the business a little over a year, they have not made nearly all the improvements they intend to. At present there are four good barns and sheds, and a first-class root house. One of the barns is used as a cattle shed in which they intend to fatten 20 head of cattle this winter. Next summer a silo will be built. This winter the corn will be saved when putting it in the barn by making alternate layers of corn and dry straw.

Three milch cows, a couple of teams of horses, and a flock of hens are kept for general farm purposes.

The chief profit in sheep raising, as managed by Messrs. Martin and Merrill, seems to be in the large number of sheep that can be kept in a small space, the cheapness of the pasturage and winter food, and in the little care required to look after the flock. If Messrs. Martin and Merrill make a success out of their venture, as they seems likely to, other farmers similarly situated should feel encouraged to further develop that branch of farm work which is now so generally neglected.

—*Ottawa Journal.*

The Grazier and Breeder.

HORN FLY REMEDIES.

During the summer live stock, especially milch cows, are terribly tormented by flies. Perhaps one of the most annoying of these pests is what is known as the horn fly, because of its habit of resting at the base of the horns. The annoyance of these and other flies cause a serious shrinkage in the milk yield and progressive dairymen have tried many remedies or preventatives in order to keep them away. In some places these preventatives are more effective than in others, but fish oil seems to be the most effective of them all. It is said to repel for from two to six days, but this depends on the exposure to the sun and the

temperature; in the southern states it does not repel for two days. The secret of success with any of these repellent dressings is their cost and the frequency with which they have to be applied.

The Kansas Experiment Station tried various substances and mixtures last season and found the following mixture as effective and cheaper than fish oil: Pulverized resin, 2 parts, by measure; soap shavings, 1 part; water, $\frac{1}{2}$ part; fish-oil, 1 part; oil of tar, 1 part; kerosene, 1 part; water, 3 parts. Place the resin, soap-shavings, $\frac{1}{2}$ part of water and fish oil together in a receptacle and boil till the resin is dissolved. Then add the 3 parts of water, following with the oil of tar mixed with the kerosene. Stir the mixture well and allow it to boil for fifteen minutes. When cool, the mixture is ready for use, and should be stirred frequently while being applied.

The mixture costs about thirty cents a gallon. From one-eighth to one-half pint is sufficient for one application. To apply the mixture, a brush is essential, and nothing is more satisfactory than a large painter's brush. At first it is well to make an application for two or three days in succession. Afterwards an application every other day or longer will suffice. Cows, in standing in water and mud, running through weeds and brush and rubbing against trees, often remove some of the mixture. In this case it is well to retouch the unprotected parts. It is often more economical not to attempt to protect the entire animal, but only those parts not reached by the head or tail. This mixture is very sticky and for this reason is not recommended for horses. It is perfectly safe, and in no case has it appeared detrimental to the health of the animal. There are those perhaps who may not want to take the trouble to make the above mixture. In this case we recommend fish-oil, which can be purchased at any drug-store. It also has to be applied with a brush, and at the rate of one-eighth to one-half a pint for each application. The cost of the fish oil would be greatly reduced if farmers would combine their orders and purchase at wholesale rates.

It is more difficult to protect horses. Fly nets are perhaps the cheapest in the long run. A mixture to be satisfactory must not spoil the appearance of the horse or prevent him being curried. The following mixture is safe and does not gum the hair. It is effective for three or four hours, and even longer. It is made as follows: Fish-oil, 2 qts.; carbolic acid (crude), 1 pt.;

pennyroyal, 1 oz ; oil of tar, 8 ozs. ; kerosene, 1½ qts. , or enough to make one gallon of the mixture. This will cost about 80 cents a gallon, and must be applied with an atomizer, not with a brush. An atomizer costs about a dollar and fifty cents, and can be obtained at any hardware or drug-store. It is very economical in the use of the mixture and enables one to make a very quick application.

Each man must decide for himself whether it is profitable to try to protect his stock from annoyance in this way. So far as the dairy is concerned it has been proved so frequently by actual test that the grain (or more properly, saving) in milk and butter where horn fly mixtures were used more than paid for the cost of the protection, without taking into consideration the increased comfort of the animals. We would advise every one handling milch cows to test these remedies for themselves and see if it is a profitable procedure. We would be glad to have the experience of anyone trying such remedies.—*N. W. Farmer.*

TO SPAY SOWS.

Constant Reader, Headingly, Man. :— “ Could you tell me how to spay sows ? ”

Answer.—Lay the sow on the right side and draw the left hind leg backwards so as to expose the left flank. Clip and wash the site of the operation and make an incision two or three inches long, beginning opposite the first lumbar vertebra, and extending downwards parallel with the last rib. This incision should be made with one sweep of the knife down to, but not through, the peritoneum (the membrane lining the abdomen). This is torn through with the finger or else seized with the forceps and cut with scissors. The first finger is passed through the wound and searches for the ovary between the bowels and the vertebral column. As soon as the finger detects it, it is drawn by a sliding movement through the wound. Here it is removed by any of the ordinary methods, of twisting it off, or scraping the ligament through, or else by ligation of the stump with sterilized catgut. The other ovary is reached by pulling gently on the horn of the uterus (from which the ovary has just been removed) until the bifurcation comes into sight, when the other horn is followed up until the right ovary is reached, and removed in the same way. The wound is then sutured and covered with collodion to exclude the air. The operation is

not always an easy one, as the thick fat on a large sow makes the finding of the ovary difficult, but in young or thin sows a little practise will soon make one proficient.—*North West Farmer.*

THE FROZEN MEAT TRADE.

England seems to be the great market for all kinds of animal products. Her own land cannot raise all the food products she needs to keep her many millions alive. The largest share of her meat is shipped to her on foot, but it is a costly way and in the interests of her own stock growers the restrictions about landing the animals imported for food are becoming more stringent and before long it will not be surprising to find all our animals killed near the place where they were fed and the carcasses shipped in cold storage. The supplies of meat sent forward from Canada and the States is technically called “ chilled ” meat, as it is not brought down to the freezing point, as is the mutton shipped the 13,000 miles from Australia.

This Australian mutton is frozen and has to be in order to stand the long voyage across the equator. The growth of this Australian trade is remarkable. It was only in 1880 that the first shipment of 400 carcasses of Australian mutton was sent to England. Now New Zealand and Australia have nearly 90 vessels engaged in the trade, which has now swollen to over 7,000,000 carcasses a year. A single vessel will sometimes carry 70,000, and at Nelson’s wharf, London, an average of 10,000 to 12,000 are handled daily. Up to 1880 sheep in Australia were kept only for their wool, hide and tallow and little attention was paid to the quality of the mutton. Since then the sheepmen have been alive to the importance of the mutton sheep and heavy importations of rams of the improved mutton breeds have been made, and some of the highest prices ever paid for sheep have been paid in Australia.

What the business of shipping chilled meat from Canada to England will grow to we cannot say, but we do know that our prairies are capable of raising an enormous quantity of meat products and we feel satisfied that there will be an ever increasing quantity for export to England and it stands to reason that sooner or later the long journey by rail to the seaboard will cause all animals to be killed at Winnipeg or Calgary and their carcasses shipped to England as chilled meat.

This is in line with the dictates of common sense and economy.—*N.-W. Farmer.*

The Horse.

THE FARM HORSE.

Besides raising horses for market, it might be wise for breeders to consider the right kind of horse to raise for the farmer. There are hundreds of thousands of horses used on the farms of this country, and this number must be renewed in part every year. The farmer is really the greatest factor in the horse factor to-day, and a little consideration of his needs is necessary. In the past, old, wornout, sore-footed car horses have gone to the farms, and because of their cheap price many farmers bought them. But there are no more car horses to pick up cheap, and farmers are looking for good, serviceable horses, peculiarly adapted to their work.

Strength is not the sole requisite in a farm horse. The true farmer's horse is one equally serviceable in pulling the plough and trotting to market with a light wagon. The light horse should thus be a medium between the draft and road horse, and may be of the light draft stock or of the heavier of the road types. The illustration is from that the road type. Courage, determination and quickness in taking hold of loads are very important qualities in this kind of horse. Animals weighing 1,100 pounds with this qualities, will often be more serviceable than the team that weighs hundreds of pounds more. A quick, steady walker is very essential. Did you ever stop to compute how many day's work you could save in ploughing with a quick walking team as compared with a slow one? (1) The team that gets over the ground rapidly saves time and money to the owner. A slow walker is poorer for farm work than a slow trotter to the sportman, and the time lost thereby is much greater.

Farm horses should have good lung and good feet and legs, in spite of the old idea that sore-footed horses would do for the farm. It is foolish to think that sore feet are not a very great disadvantage. The horse must be able to produce a yielding purchase in the soil, and sore-feet will reduce his pulling powers greatly. Inherited sore feet are worse than those acquired, for no

(1) True, but can a good furrow be drawn after horses walking more than, say, 2½ miles an hour? *Ed.*

amount of care will then cure them. The farmer who attempts to raised colts for his own use should be careful to select good breeders that would produce progeny of the desired type. Very often the farmer can raise his own horses better than some professional breeder, unless the latter gives special attention to the needs of the farmer.

Farming.

GOVERNMENT OWNERSHIP OF STALLIONS

France has done and is doing more along this line than any other country. By a decree of Dec. 9th, 1860, subsidies or prizes of from 100 to 600 francs each, according to the breeding and quality, were authorized to be given to approved mares with colts by Government stallions. On May 5th, 1870, the department of agriculture appointed a director-general, eight inspectors, twenty-six sub-directors, ten superintendents and twenty-six veterinaries. The work of this department was so satisfactory that in 1874 the number of stallions owned by the Government throughout France was to be ordered increased 200 per year until they should number 2,500, and the appropriations necessary for prizes awarded to breeding animals should reach 1,500,000 francs par annum.

In this organization one central object has constantly been kept in view by the French Government; that is the encouragement of the people to adopt a higher standard of breeding. To accomplish this purpose the choicest stallions of the different breeds and types were introduced into each locality, and offered for use to the mare owners at a nominal fee for service. To further prevent the use of inferior animals a decree was issued in 1885 excluding from public service all stallions not authorized by the Government.

In 1887 the Government owned 2,460 stallions and exported 34,518 horses from France during the same year, showing that other countries appreciate French horses.

While an elaborate system of this kind might not be practicable for this country, still something might be done in the way of licensing and inspecting stallions used for service that would be very beneficial in improving the quality of the horses raised in Canada. One great drawback is the lack of uniformity and some definite standard to which to breed up to. There is too much changing about and lack of system in the methods adopted by our farmers in breeding horses — *Farming.*