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THE JOURNAL OF AGRICULTURE AND HORTICULTURE

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THE
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The Farm.

DEEP AND SHALLOW PLOWING.

Would you advise deep or shallow tilling of the soil as a rule? And please give season for your answer.

N. S.

Little Valley, N. Y.

There is no one rule for plowing that will apply to all kinds of soil (nor year after year on any soil.) If a light, deep mold is to be plowed, one that contains an abundance of stored up fertility and good under drainage, then a very shallow furrow will be found sufficient. If, on the other hand, the soil is a heavy, tenacious clay, deep, heavy furrows are turned so as to bring the under soil to the action of light, air and frost, thus rendering the soil more friable and easily worked; also to get the advantage of the action of the nitrifying organisms. If the soil is a light loam with a heavy, water-tight subsoil, and allow the rain water to percolate through the upper layers and thus prevent accumulation of water in the upper layers; but, on the other hand, the bringing to the surface of an infertile clay by deep plowing, will frequently seriously damage the fertility of the surface soil. There are too many varying conditions of soil to enable one to say that either deep or shallow plowing is preferable. The farmer must adapt his methods to the quality of his soil, and plow accordingly. Ex.

MANGELS AND SUGAR BEETS.

What is the difference between mangels and sugar beets for dairy cows?

H. A. B.

Normandy, Mo.

Mangels and sugar beets contain the following per cents of digestible nutrients:

	Protein.	Carbohydrates.	Fat.
Mangels.....	1.1	5.4	0.1
Sugar beets.....	1.1	10.2	0.1

The great difference between the two roots is that sugar beets may contain as high as 20% of cane sugar. Probably on this account sugar beets are liable to cause scouring if fed in large amounts, and it is thus advisable to grow mangels in preference to beets, if grown for cow feed. (1)

Hoard.

BONUSING BEET ROOT SUGAR.

To the Editor of FARMING :

I notice in a recent issue of *Farming* that a large and influential deputation of men interested in the beet sugar industry waited upon the Ontario Government and asked for a bounty upon a sliding scale for a few years in order to establish the industry in Canada. Now, sir, I am, probably, just as much interested in the establishment of the beet sugar industry for Ontario as anyone else, because I can see that it means another industry that will not only benefit the country generally, but also the farmers in particular, whose interests I have always to heart, having been one myself. I see no reason, however, why this industry must be bonused in order to make it a success. I have been in communication with Old Country capitalists who are ready to furnish the money for establishing a factory, if only a sufficient number of farmers will guarantee to raise enough beets to keep the factory running at a profit. From enquiries they have made they are convinced that there will be good returns both for themselves and for those who will produce the beets. Our climate is most favorable; there is plenty of suitable soil, and, altogether, there is nothing to hinder the carrying out of the project, except the strange unwillingness of the farmers to further their own interests by growing the beets.

I must not further trespass on your space now, but, I shall be pleased to give further particulars in your columns should any of your readers desire it.

EX-FARMER.

Toronto.

(1) True; besides, a good crop of the one is 15 tons an acre; of the other, 25 tons is very common. *En. J. of Ag.*

NOTES BY THE WAY.

A nice couple of cows.—*Hoard's Dairyman*, for March 9th, gives portraits of two Guernsey cows, Lily Ella, 7240; who gave, in the twelve months from Nov. '98 to Oct. '99, both inclusive, 12,282,68 lbs. of milk; average per cent of fat, 6.42; butter, 912 5 pounds; and Lilyita, 7,241; Record, 12,812 73 pounds of milk; average per cent of fat, 5.69; butter, 828.95 pounds.

Each of these marvellous creatures produced a living calf during the year, both calving on the same day, December 7th, 1898.

General food: Silage, 35 lbs.; hay, 5 lbs.; mangels, 10 lbs.; bran, 7 lbs.; oats, 7 lbs.; corn-meal, 3 lbs.; oilcake, 1 lb.; gluten-meal, 1 lb., during the months from December to the month of May, when they went to pasture. On grass each cow got 5 lbs. of bran and 5 lbs. of oats, during May and June; in July, 5 lbs. of bran; 5 lbs. of oats; 2 lbs. corn-meal; in August, 6 lbs. of bran and 6 lbs. of corn-meal, and so on till October, when each cow received in addition to the pasture, bran, 4 lbs.; oats, 4 lbs.; corn-meal, 4 lbs.

Curious statements.—We have lately met with some singular opinions, emitted with great complacency in certain reports of public meetings. One man, upon being asked to give his opinion on the use of artificial manures, replied:

"Ans. There are times and cases when it can, no doubt, be used to advantage, but I believe in feeding good balanced rations of concentrated foods to our stock and receiving in return manure of high value, as well as returns in milk or beef, and, in that way, we are not only sustaining the fertility of the land, but receiving good cash returns from its use".

Now, no one disputes the value of dung from well-fed cattle, but the respondent might have laid a little more stress on his verdict as to the use of artificial manures, as assisting to spread the efforts of dung over a larger surface of ground. In England, we have been accustomed for, at least, the last 50 years of growing all our root-crops with a mixture of dung and artificials. If an intelligent farmer there is sowing swedes or turnips, he would plough in a moderate dressing of dung, to begin with, and drill in with the seed a couple of cwt. of superphosphate, the latter to start the young plant into active life so that it may quickly

"come to the hoe"; the former to supply food to the more advanced plant when, towards the autumn, the force of the superphosphate is exhausted.

And so, with the mangel; it having been discovered years ago, by Mr. Pusey, that nitrogen has a wonderful forcing power on beets of all kinds, no advanced farmer would think of growing mangels without adding a cwt. or so of nitrate of soda as a top-dressing.

As for grain-crops, a mixture of nitrogenous manures and superphosphate may sometimes be used for them, but only in the case of crops where the effects of dung applied to preceding crops may be supposed to have been exhausted.

Again, a writer advises the growing of more clover as an essential element in maintaining the fertility of the soil as well as increasing humus, so essential to all soils. He pointed out that "since a better knowledge of the value of clover has been attained, Britain has almost entirely ceased to use commercial or artificial fertilisers, relying on clover to supply their place."

This is one of the most marvellous statements we ever read! Never, since their introduction, were larger quantities of artificial manures used in Britain than are used to-day. If such statements are the fruit of the teaching of agricultural educational establishments on this continent, we are sorry for the prospects of the farmer who trusts to it. Why, years and years before the use of artificial manures was even dreamed of in Britain, even before bones were used in the North, the Norfolk, or 4-course system of rotation was in full play in England; clover was sown regularly every fourth year, the shift being, as most of our readers know; roots, barley, clover, wheat. The value of clover was most highly appreciated, until, as we have mentioned a dozen times in this periodical, its frequent repetition on the same land caused the plant to fail so frequently that its repetition was postponed to the 8th year; so that, we are speaking within bounds when we say that the number of acres sown to clover in England to-day is far less than the number sown 60 years ago. The 4-course rotation is now converted into an 8-course: roots, barley, clover, wheat; roots, barley, pease on light, beans on heavy land, wheat; and very few acres of roots are sown without a moderate dressing of artificial manures in addition to a fair coat of dung. Nay, more;

rape, and the later sown crops of white turnips, both to be fed off by sheep, are, we may say, invariably grown by the use of artificial manures, generally superphosphate, alone.

But, now, comes a statement of a very different kind, emitted by a writer who really seems to have studied practically the subject of which he treats:

Too many farmers, he maintains, leave their clover too long before cutting for hay. He recommends beginning to cut when half the blooms are out. "Cut without dew, turn at once in order that the blossoms, leaves and tender stalks be dried in the shade and the coarser stalks be exposed to the sun; rake and cock at the earliest possible moment. As soon as the mass is nicely wilted, not waiting until the leaves begin to drop off, put in small coils and when ready to draw in, turn the coils over to dry the moisture out of the bottom. Above all, do not store hay containing foreign moisture, dew or remains of rain."

Particularly good advice as to the turning the cocks upside down, instead of shaking them out; far more chance of keeping the leaf on by that treatment. If this plan of making clover-hay were strictly followed out here, the effect would be that the price of that valuable fodder would be higher by dollars per ton.

Very sensible, too, is the following article from *Farming*, on the sheep-worrying nuisance. Some years ago, Mr. Tom Irving, of Petite Côte, Montreal, told us that he had been obliged to give up keeping sheep entirely on account of the murderous propensities of stray dogs.

SHEEP WORRYING BY DOGS.

In last week's issue of *Farming* appeared a communication from J. H. Wooley, Simcoe, Ont., calling attention to the fact that at the last session of the Legislature sheep farmers were promised at the next session some better legislation in regard to the worrying of sheep by dogs than is now upon the statute books. Whether the present law is to blame or not there is certainly no abatement in the dog nuisance in connection with the sheep industry of this province, and it is time that something were done to remedy matters. If the law is to blame, and there is good reason for believing that it either does not meet all the

exigencies of the case or is not properly enforced by the municipalities, it should be amended without delay. Why should we have a law upon our statute book if it cannot be made effective in lessening to some extent the evils which it was intended to prevent? It has had a sufficient trial and it is time now for something better, if it is at all possible to have it.

We realize fully the very great difficulty there is in successfully coping with this question. But the extent and serious losses sustained by many farmers through having sheep destroyed by dogs demand that, if at all possible, some effective remedy should be applied that will reduce the nuisance to a minimum. There are many farmers in this province to-day who refuse to keep sheep because of the liability of their being destroyed by dogs, and because of this, are forced to give up what would otherwise be a very profitable branch of business. A good, well-trained dog is a valuable animal to have either in town or country, but so far as the farmer is concerned he is not a money getter like a sheep, and if it comes down to a case of whether the sheep or the dog is to remain, who will say that it should not be the animal of the "golden fleece." But as far as our experience goes it is not the good dog that is responsible for the bulk of the sheep worrying in the country but the sneaking, insignificant cur that is of no value to anyone, excepting to consume food and increase the dog tax treasury.

The time is now opportune for discussing this whole question and considering whether a most important industry in this country is to be seriously hampered because some people have a desire to own a few valueless dogs with a special hankering after sheep; and we should be glad to hear from sheep farmers and others as to the working of the present law and how it can be amended so as to remedy the evil. Any changes in the way of legislation should only be made after the fullest canvass of the whole subject in question.—*Farming*

Spring is at hand: that is no news, but it is a piece of information that, common as it is to every one, is not attended to by the farmer-class as much as it ought to be. People are too apt to postpone getting things ready for work; horses are left unshod; plough-irons unfitted; drills, ungreased; and so on; so that every thing has to be done in a hurry when the time comes to go to

work in real earnest, and the consequence is, that the work is too often scamped. Oh! that 'll do, is too often heard when the harrows are at work, and when a couple more times would improve the tilth amazingly. As Stephens says: To keep up work is easy; but to overtake work is a very different thing.

There is no need for us to warn you not to be afraid of early sowing, this year; for to-day, March 22nd, the entire crop of snow is still on the ground, and it does not seem likely that much work will be done on the land in April. All the more reason why you should get everything ready for a start when the time for work really does come.

Look carefully to the lambing ewes; some people do not like twins; nay, we have even heard of a man who always knocked one of the twins on the head when a ewe gave him two at a birth! It would be well to put ewes with twin-lambs by themselves, and to feed them a little better than the rest. Cut the ram-lambs at ten days old, if the weather is not too severe, and dock their tails at the same time. There are two ways of castrating a lamb or calf: 1st, cut off the point of the scrotum, and extract both testicles through the opening; 2nd, cut through the right-hand part of the scrotum and extract one testicle, doing the same thing afterwards to the left-hand one. The latter process makes a smaller wound than the former, but we always followed the former plan and it served us well.

Above all things never omit the castration of the male lambs. Whoever sees the lots of ram-lambs that come into the Montreal market every fall, after having passed the last 2 months of their short lives in worrying themselves, their dams, and their half-sisters with their vain saltatory efforts after aphrodisiacal delights, cannot wonder at the quantity of red-fleshed, meagre, rank-flavoured mutton to which we are treated during the long winter of this town.

It is quite true that some of the best sheep-farmers of England postpone the castration of their lambs till the autumn; but these are sheep-breeders who keep large flocks, and the uncastrated males are kept by themselves, after weaning, far away from their dams and the ewe-lambs.

If much blood flows from the dock of the tail, tie a string round the tail. But this is rarely necessary. If it is done, the string must not be allowed to remain on more than 24 hours, or else

the point of the tail will slough-off, owing to the stoppage of the circulation.

Sometimes, one of the testicles does not descend into the scrotum; in this case, unless you want your flock to be worried out of their lives, eat or otherwise dispose of this *chaser*, as he is called in shepherd's parlance.

In the South of England we used to consider a fair fall of lambs to be 125 to the hundred ewes. We have had, from our Hampshire-down flock of 245 ewes, 320 lambs, born alive; many were lost, owing to the abortion of the ewes from having been kept too long on turnips without nitrogenous food. The ewes were all "full-mouthed"; had they been "two-toothed" when put to the ram their prolificness would not have been so great.

How to tell if a cow is in calf.—The ear is the best judge; if your ear is not very sensitive, borrow a *stethoscope* from your friend the doctor; by its use the existence of pregnancy may be detected at as an early a stage as six or eight weeks from the date of service. By that time the beating of the calf's heart—a double-action beating—may be distinctly heard.

A trifling quantity of linseed-cake, or of crushed linseed which is better; a pound of the latter or two pounds of the cake; given daily for a fortnight before and the same after calving, will keep the bowels of the cow gently open, and go a long way to prevent milk-fever.

Milking.—Look sharply after your milkers; they are mighty apt to avoid the trouble of drawing off the last drops of the milk, by which the milk becomes too thick to flow—the last drops being, as every dairyman knows, by far richer than the rest,—and soon produces inflammation, ending by the closing of one or more of the teats. This closing of a teat is very commonly observed in what are called "family-cows," i. e., the cow kept for the supply of the house, when the cook is the usual milker, and naturally does not like her task.

Crushed linseed, added to skim-milk, is by far the best substitute for the natural milk of the cow. Boil the linseed, in lots of water, and stir it up in the warmed milk. If you prefer ground oats,

sift out the husks, as the irritation they set up (peristaltic action) often produces diarrhoea.

Again, we repeat: don't let the cow see the calf after it is born until it is weaned.

FARMING IN CHINA.

PROVINCE OF SWATOW.

The chief expense of tillage is in fertilizers, beans and sesamum-seeds from which the oil has been expressed being commonly used, at an outlay of from six to forty and an average of twenty-four dollars upon every acre of land. Besides this, potato-peelings, hair from shaven heads, and all other vegetable and animal refuse is carefully husbanded and methodically applied to the soil. The clods of the field are laid up into little ovens to retain and be enriched by the smoke of the stubble burned underneath them. Adobe houses, whose walls have for many years absorbed the fumes of a kitchen and the exhalations of human inmates, are pulverized and added to the ever-hungry earth. Each growing plant separately receives distinguished consideration, a scrap of tobacco-stalk being sometimes put beside its root to destroy underground grubs, while its leaves are frequently examined and sedulously freed from vermin. The rotation of crops is always practiced.

AN EXAMPLE.

Pong Hia lives in a village of three hundred persons, in which about thirty men are land-owners, having altogether forty-five acres of land. Pong Hia owns two acres, inherited from the father who adopted him. His land is worth one thousand dollars. His family consists of ten persons. He is himself forty-six years old, his wife is forty-one, his son is twenty-two, his son's wife is twenty-one, his four daughters are from ten to seventeen, and his two grandchildren are three and seven years old. He and his son till the land, hiring help at harvest-time, and weaving

Note.—Just as in Gloucestershire (Eng.), where any night in September, a thousand heaps of earth and stubble used to be seen smouldering away; on the heavy land, though, not on sandy soils. This was called "Stifleburning," *stifle* being the diminutive of *stive* to repress; akin to the French *étouffer*, to smother; from the Latin *stipare*, to press together.

We say "used to be seen," because, nowadays, the use of the reaper, in place of the sickle, cuts the stems too short to leave enough stubble to burn the clods. Ed.

straw mats on rainy days. The women-folk make the clothing, rear pigs and fowls, and do all the house-work. Their dwelling, with its site, is valued at a hundred and twenty dollars, their furniture at forty-four dollars, their clothing at forty dollars, their farming appliances at forty dollars. They have a water-buffalo, two hogs, thirty fowls, ten ducks, a pair of geese, a dog, and a cat. Last year Pong Hia sold twenty dollars' worth of rice from his farm, and paid \$3.60 in taxes. He has two hundred dollars out at interest, at eighteen per cent.

DEDUCTION.

At this rate of production and consumption, the arable land in the State of New York, with a reduction of one half its returns on account of its more northern latitude, would support the total population of the United States at the present time; and the occupied arable land of the United States, with its producing power diminished, on account of climate, to one half that of land at Swatow, would feed a population equal to that of the whole world, or over 1,400,000,000.—*Pop. Sci. Monthly.*

Household Matters.

(CONDUCTED BY MRS. JENNER FUST).

PREVENTION EASIER THAN CURE.

It will be greatly to the credit and profit of the young and inexperienced housekeeper if she starts in good time to prepare for the advent of the numerous little pests that will be sure to come with the Spring. The advance-guard is here, few in number, and if these are exterminated there will be no more anxiety in the matter. It will be left for the careless people to deal with the larger number.

The moth is one of our most expensive enemies; it spares nothing, from the most expensive furs to the oldest garment, always providing the latter woollen.

The only certain defence against this little creature is to have nothing for them to attack. Furs should be aired, shaken and combed carefully with a coarse comb, then put into clean bags without a single hole in them; throw in a few lumps of camphor, or camphor balls, tie the mouth of the bag firmly, and you can rest contented, knowing that you have the enemy in a corner.

WINTER CLOTHES.

All kinds of winter clothing should be treated much in the same way. Choose a windy day, if possible, to give the garment a good airing; brush well, and see that every particle of fluff is got rid of. This applies more to men's clothing, where a lot of this stuff is sure to be found under the fold of the seams, etc., turn pockets out and brush well.

If they are to be put away in a box or trunk, start by laying clean, fresh newspapers on the bottom, with some camphor, and a sprinkling of cloves.

Now a layer of clothing, again some more newspapers, camphor, and cloves; continuing these layers till the box or trunk is full.

A piece of tar-paper on the top of the last layer of paper will make all secure; for moths hate printers' ink, camphor, and cloves, and will not go near tar-paper. A slight airing in the autumn will soon get rid of the smell of the tar-paper.

BAKED COD.

Boiled cod, I think, is most tasteless fish, reminding one sometimes of boiled flannel. Perhaps I may be prejudiced against it; very likely I am. My dislike, however, is only to cod boiled. Cut into steaks, dipped into egg and bread crumbs, it becomes quite another thing and is really very nice, but give me cod baked, then the fish becomes a delicacy indeed. Procure about 2 lbs. tail-end of cod, cut into slices, and dip into flour. Butter a fire-proof dish, sprinkle the slices of cod lightly with pepper and salt, and place in the dish. Squeeze a little lemon juice over it, pour half a small teacup of water round the fish, cover with a plate, and bake for twenty minutes in a hot oven. Put an ounce of butter into a saucepan and when melted mix in an ounce of flour and a very little salt and pepper; now add the liquor from the baked fish, with a little milk if necessary, stir till it is perfectly smooth and coats the spoon, add a teaspoonful of chopped parsley, pour the sauce over the fish, and serve in the dish it was cooked in. If you have not tried this method of cooking any fish, do so, it is far more digestible than fried fish.

COLD POTATO COOKERY.

Never throw away cold potatoes, for they form the basis of the most appetising dishes imaginable

which come in well as breakfast, luncheon, or supper dishes. Here is one for instance, called "potatoes au gratin." Well grease with butter a rather shallow dish. Mince eight common-sized cold potatoes. Put half of it in the dish. Grate up bits of left-over cheese (if half parmesan it is nicer), to make two heaped up tablespoonsful. Sprinkle half of these evenly over potatoes in dish, then a very thin layer of fresh breadcrumbs, moisten these with two tablespoonsful of milk, dot sparingly with butter, and lightly lay in the rest of potato. Sprinkle one-half teaspoonful of salt over. Now mix the other tablespoonsful of cheese with two of fine bread-crumbs, spread these evenly over, dot with two teaspoonsful of butter bits and bake fifteen minutes in rather slow oven. Serve hot.

POTATOES MAITRE D'HOTEL.

Take one pint of cold sliced potatoes, blend together one heaped teaspoonful flour and one dessertspoonful of butter, mix with one cup of milk, one half-teaspoonful of salt, and a good pinch each of pepper and nutmeg. Put over fire, stirring continuously for seven or eight minutes. Take up, add the potatoes and return to stove till thoroughly heated through, but do not let it boil; then remove to back of stove. Quickly beat one yolk of an egg, mix it with one dessertspoonful of cold water and two teaspoonful of lemon juice, stir well and quickly add it to the hot potato, stirring briskly a minute over fire and pour into a hot tureen. Garnish with sprigs of fresh parsley.

CREAMED FISH.

Remove the skin and bones from 1 lb cold cooked fish, break the flesh into small pieces, and place it in a buttered baking dish. Melt 2 tablespoons butter in a saucepan, and stir smoothly into it $1\frac{1}{2}$ tablespoons flour, add by degrees 1 cup milk, let boil till smooth and thick, remove from the fire and add seasoning (a little grated nutmeg is nice), spread this over the fish, sprinkle with grated cheese, or with bread crumbs if preferred, and little bits of butter. Any kind of fish or canned fish is nice served in this way.

CURRIED EGGS.

Add 1 tablespoon curry powder to 2 onions sliced and fried in butter; let them stew in 1 pint good broth or gravy until tender, mix with 1 cup

milk, and thicken with a little flour or cornstarch, about 2 tablespoons. Simmer for a few minutes, then add 8 hard-boiled eggs cut in slices. Let them get very hot, but do not boil.

A CURRANT LOAF.

A home-made currant loaf is a capital thing on the pantry shelf when the children come tumbling in from school eagerly demanding something to eat. Although this form of cake can be bought from the bakers, mother's cake is generally liked the best. Stir half an ounce of German yeast into a little sugar until it becomes a liquid. Warm half a pint of milk, stir in it about six inches of fresh dripping, and mix well with the yeast. Now put a pound and a half of flour into a bowl, and making a hole in the centre, pour in the yeast, etc., and two well-beaten eggs, and make all into a soft dough. Stand it in a warm place for about half an hour, and then add half a pound of brown sugar, half a pound of currants, two teaspoonfuls of mixed spice, and two ounces of candied peel cut into very small pieces. Pour all into a well-greased tin, let it rise for another half hour, and then bake in a moderate oven for an hour and a half.

To make Apple Fritters, peel firm, tart apples and cut into thin slices and put them in a bath of claret and sugar or cherry juice and sugar when cherries are in season. Let them remain for three hours. Sprinkle thickly on a clean cooking napkin an ounce of flour and roll the apple slices in it after they have been drained. Fry in hot fat and serve hot with pieces of lemon and spiced sugar.

For Rice Shape with Fruit Juice, put four ounces of ground rice in an enamelled saucepan, boil it with a pint and a half of milk and water with a dessert-spoonful of sugar. Simmer it gently and stir constantly. When thick and sufficiently cooked mix half a pint of any fruit juice with it, boil together for a few minutes and add more sugar if required. When the syrup from bottled fruit is used a good deal of sugar must be added. Pour into a damp mould and turn out when set.

TO CLARIFY DRIPPING.

Put the dripping into a saucepan and pour over it plenty of boiling water add a teaspoonful of borax stir well and let boil for 5 minutes, strain

through muslin into a basin. When cold scrape off with a knife, the sediment which will be on the under side of the dripping. Wipe dry and keep in a cool place.

HOW TO KEEP FERNS FRESH.

After using them as a centre piece for the table, water and place them under some kind of glass-cover; thus being kept surrounded with moisture, they will retain their colour, and look fresh and nice for a long time.

A centrepiece of ferns or flowers adds so much to the nice look of the dinner table, that the wonder is, that being so little trouble, "and causing such a relief to the eye," it is not always to be seen there.

Discoloured and stained marble requires careful cleaning. Two parts of common soda mixed with one of pumice stone and one of powdered chalk should first be rubbed through a fine sieve and then mixed with water. Rub the marble well over with this mixture and the stains will be removed. Then wash the marble with soap and water and it will be as clean as when first put up.

The Dairy.

DAIRYMEN MEET.

Large Factories and Better Cattle Needed— Education Urged.

Insect pests may be abolished by combined effort.

(Special to the Star.)

Cowansville, March 15.—The annual convention of the District of Bedford Dairymen's Association was convened in the town hall here yesterday afternoon. The president, Mr. H. S. Foster, of Knowlton, was in the chair. There were on the platform: Ex-Governor Hoard, of Wisconsin; Dr. Fletcher, Government Entomologist, of Ottawa; Mr. D. Derbyshire, of Brockville; Mr. A. W. Grindly, assistant to Professor Robertson, Commissioner of Agriculture.

The president congratulated the association upon its success in securing the presence of ex-Governor Hoard, who he declared, was the greatest authority on dairy interests in the United States. He briefly outlined the efforts that had been put forth in the past in the interest of the

dairymen of the district. Combination and co-operation were the key to the success of the farmers. Reduction in the cost of production, organization on a large scale for the purchase of factory supplies, and the placing of products on the markets were the great needs of the hour. Mr. Foster was most anxious to have a brand for the Eastern Townships that would, in the near future, be the symbol of the very best Canadian products to be found on the English market.

EDUCATING DAIRYMEN.

Mr. D. Derbyshire, of Brockville, outlined the work that is being done in Ontario. Dairy schools had been inaugurated and cheese and butter makers were obliged to spend a portion of each year in those schools to discover the latest thought and methods of their art. Patrons' meetings were held every month, when results were compared and discussed.

Ex-Governor Hoard was most warmly received when he rose to address the assembly on the "Higher per cent; of profit." He gave interesting figures of the different results obtained by two farmers, contributing milk to factories under his control. One realized an income of \$65 per cow; the other only \$35. The cost of producing this income was, in the former case, \$35; in the latter, \$30. Farmer number one had a profit of 600 per cent. over number two.

BETTER CATTLE NEEDED.

He urged the necessity of careful breeding of dairy qualities in cows, and refuted the statement that differences in dairies was wholly a matter of feed. He briefly outlined the history of Jefferson County Wisconsin, where 40,000 cows are kept, 79 creameries sustained, and 7,000,000 pounds of butter made, valued at \$2,000,000. This success was purely the result of organization and education. He insisted that the mind must be developed before the hand.

PREVENT INSECT PEST.

Dr. Fletcher gave an address on the insect pest. He charged the people with farms and orchards with being largely responsible for the plague of caterpillars that infested the country for the past two years. If every one would but spray their orchards with the proper insecticides, they would most materially check the ravages in the woods. The professor is of the opinion we shall not see so much of the caterpillar next year as we did last year.

Dr. Wm. McLean, Oregon, State Veterinarian, took up the subject of Milk Fever. He said: "Milk fever is a disease that only affects the best milch-cows; those in the prime of life, and those giving the best and largest flow of milk. There is no particular breed of cows more susceptible to the disease than any other breed, showing the same capacity in the production of milk and butter fat. The disease invariably comes on after easy labor, when there is no shock to the nervous system.

There are three forms of the disease known as milk fever, parturient paresis, and parturient apoplexy, all being produced by the same causes, viz; septic intoxication and septic infection. The symptoms of the disease are according to the parts affected. When it is simply milk fever we have a feverish condition of the system, the secretion of milk will become less or completely fall off, the animal appears dull, stops chewing her cud, loses her interest in her calf, does not care to move, will lie down most of the time, and when up will move with a tottering gait.

The disease coming only in the prime of life and when the cows are in a plethoric condition, do not feed them a highly nitrogenous feed (1) for a week or ten days before calving, and also for a few days after. It is well to give a dose of Epsom salts a few days before calving; or immediately after calving give a few doses of saltpeter.

The disease being of septic origin must be treated by antiseptic means. The udder should be washed clean, and injected with a solution of iodide of potash, $2\frac{1}{2}$ to 3 drams to a quart of water that has been boiled. Inject one-fourth of it in each teat, working it well up into the udder. The uterus should be cleansed, and injected several times a day with water that has been boiled and had the addition of a tea-spoonful of carbolic acid, and a table spoonful of glycerine, to one or two gallons of water; or corrosive sublimate may be used in the proportion of one part to two or three thousand parts of water."

(1) But a pound a day of crushed flaxseed is not a great deal of highly nitrogenous food. ED. J. OF AG.



CHEDDAR CHEESE.

(Continued)

The conditions which affect the quantity and the quality of milk

This subject will be best dealt with by studying seriatim the stock, the yield of milk, and the effect of season, at each site where the Cheese School has been held. It will then be found that on the same farm, from the same cows, and off the same pastures, both the quantity and quality of the milk yielded varies from year to year, and this variation can only be accounted for as due to changes in both the quantity and quality of the food which those pastures supply. It will further be seen that the effect of different farms and different seasons is even still more striking. Further, the breed of the cows, drought, rainfall, artificial feeding, and other minor causes affect the results which are obtained.

The influence of season will be found to be remarkable in many ways, while a comparison between different seasons is possible by determining the date when the maximum yield of milk is obtained. Thus, in the years 1892, 1895, 1897, and 1898, the average maximum yield of milk was not obtained until the month of June, whilst in the years 1893, 1894, and 1896, the average maximum yield was obtained in May.

The stock and yield of milk at Vallis in 1891.

The number of cows was about 50.

They were of somewhat varied character, being mainly crossbred animals with both Longhorn and Shorthorn blood in them. The size of their udders was, in my opinion, small, and consequently the animals were not calculated to give a large yield of milk.

In addition to the food which they obtained from the pastures, the younger animals, about one-third of herd, received from September 15th a mixture of 2 lbs. cotton-cake, and 2 lbs. linseed-cake each, per diem. The composition of the milk for August, September, and October, is shown in Table I., and the yield of milk curd, &c., in Table II.

The stock and yield of milk at Axbridge in 1892.

On April 1st there were 30 cows in milk. These had increased to 48 by May 25th, leaving

two more to calve. Ten were heifers with their first calf. The cows were ordinary Shorthorns of no precise character. No especial care appeared to have been taken to breed good milkers, and no register or record of the milk of individual cows had been kept.

The cows were on the pastures day and night during the whole period of cheese-making. They received a little cake in the early months, and also in the autumn.

Influence of Season.—The season was most unfavourable to the growth of grass, and the cows were, therefore, compelled to travel about and

observed in August was due mainly to season. Mr. Armstrong, the occupier of Vallis Farm, was asked to send me samples of the mixed milk he was then obtaining, taken from his cheese-tub at the same time as the samples were being taken at Axbridge. This he did in September, and again in October, and the results of the analyses of these samples are given in the following table side by side with the results obtained on the same days in 1891 at Vallis, and in 1892 at Axbridge:—

It will be seen that the milk obtained at Vallis in 1892 was poorer than in 1891, which is probably the result of season, but it was richer than

COMPOSITION OF MILK AT VALLIS AND AXBRIDGE COMPARED.

Date.	VALLIS, 1891.			VALLIS, 1892.			AXBRIDGE, 1892.		
	Fat.	Casein, &c.	Solids.	Fat.	Casein, &c.	Solids.	Fat.	Casein, &c.	Solids.
Sept. 12.....	4.03	8.75	12.78	3.66	8.69	12.35	3.65	8.99	12.64
“ 13.....	4.07	8.73	12.80	4.02	8.70	12.72	3.55	8.97	12.52
“ 14.....	3.85	8.75	12.60	3.88	8.56	12.44	3.69	8.93	12.62
“ 15.....	3.98	8.86	12.84	3.96	8.76	12.72	3.57	8.87	12.44
“ 16.....	3.75	9.13	12.88	3.84	8.66	12.50	3.65	8.97	12.62
“ 19.....	4.05	9.00	13.06	3.85	8.71	12.56	3.45	9.07	12.52
Average.....	3.96	8.87	12.83	3.87	8.68	12.55	3.59	8.97	12.56
Oct. 20.....	4.84	9.10	13.94	4.16	9.02	13.28	3.88	9.16	13.04
“ 21.....	4.98	9.08	14.06	4.24	9.04	13.28	4.08	9.20	13.28
“ 24.....	5.07	9.07	14.14	4.05	9.05	13.10	4.08	9.20	13.28
“ 25.....	4.91	9.09	14.00	4.16	9.22	13.38	4.13	9.25	13.33
“ 26.....	5.05	9.09	14.14	4.52	9.05	13.58	4.01	9.25	13.26
“ 27.....	5.20	9.10	14.30	4.49	9.06	13.54	3.80	9.20	13.00
Average.....	5.01	9.09	14.10	4.27	9.07	13.36	4.00	9.21	13.21

keep moving to get sufficient food. It is evident then that the conditions were such as to prohibit either the largest quantity or the best quality of milk being obtained. Though it is difficult to compare the milk of one herd with that of another, much less at a year's interval, and to say definitely what causes the difference, if any, between them, yet the following comparison, between the composition of the milk yielded at Frome in 1891, and at Axbridge in 1892, during the three months, August, September, and October, is interesting:—

As it seemed probable that the difference first

that given at Axbridge. So the poorer quality of the milk yielded at Axbridge is probably characteristic of the milk yielded by such pastures.

The stock and yield of milk at Butleigh in 1893.

On the 1st April there were 38 cows in milk, 21 belonging to Mr. Bethell, and 17 to Mr. Hunt. They were then being stall fed, Mr. Bethell's cows receiving six pounds of cotton-cake per diem and mangels, and Mr. Hunt's a little less cake but additional hay. Soon after the cheese-making began, they were turned out to grass in the home fields, and on the 25th April went down on the

	AVERAGE COMPOSITION OF MILK.						
	Water	Solids.	Fat.	Casein.	Albumin.	Sugar	Ash.
Vallis Farm, Frome. Aug. 1891 } }	87.39	12.61	3.87	2.76	.37	4.84	.77
Compton House Farm, Axbridge. } Aug. 1892..... }	87.72	12.28	3.38	2.65	.37	5.20	.68
Vallis Farm, Frome. Sept. 1891 } }	87.00	13.00	4.13	2.99	.41	4.69	.78
Compton House Farm, Axbridge. } Sept. 1892..... }	87.44	12.56	3.57	2.87	.41	5.05	.66
Vallis Farm, Frome. Oct. 1891 } }	86.19	13.81	4.75	3.21	.47	4.61	.77
Compton House Farm, Axbridge. } Oct. 1892..... }	86.87	13.13	4.00	3.08	.51	4.84	.70

moor, owing to the exceptionally warm season. They were, however, given some compound cake for some little time afterwards. On the 18th April there were 42 cows in milk, 24 of Mr Bethell's and 18 of Mr Hunt's; and on the 29th. Mr. Bethell had 25, and Mr. Hunt 19 in Milk, On the 11th May they were increased to 52, and on the 25th there were 55 in milk. The number remained about the same for the rest of the period. They were mostly Shorthorns; and the average yield from Mr. Bethell's cows was greater than that from M. Hunt's. This, Mr. Bethell attributed to the fact that he took great care in selecting the cows, and got rid of those which were found to yield less than he considered a fair amount of milk.

The effect of the season.—The season was an exceptional one, and the result thereof was seen in many ways.

First. The effect of the warmth was already felt in April. Thus in 1892 the average time of vatting in that month was 6.58 p.m., while in 1893 the average time was 4.34 p.m., nearly 2½ hours sooner. That this was due to the heat is shown by the fact that the average temperature of the dairy in 1892 was 54–60°, and in 1893 from 59–68°. It is also seen by comparing the average temperature of the curd when in vat, which in 1892 was 67° Fahr., while in 1893 it was 76° Fahr.

Secondly. It we compare the average results obtained at Butleigh in 1893 with those obtained at Vallis and Axbridge in 1891 and 1892, it will be seen that the yield of milk, owing to the shortness of keep, declined in June, and still further in July, while in each of the preceding years it rose in June very considerably, and even in July was in one case more than, and in the other nearly equal to, the yield in May.

Great as the influence of the heat, as seen in the monthly average milk-yield, it was still greater when the yield is compared week by week. Indeed, the fluctuations were quite remarkable, the yield sometimes rising, and then again falling in a manner not easily to be accounted for.

Effect of drought.—The following facts show the effect of the drought, and also indicate how very rapidly the cows felt the effect of any change produced in the food. The milk supply on the whole gradually decreased from the end of May. During the last week of May the cows were yielding about 160 gallons of milk. From that date scarcely any rain fell until the 22nd and 23rd June (see Rainfall, p. 47). The average yield of milk for the week preceding this fall was 131.7 gallons per day, but for the week after it rose to 137.1 per day. Then it began to diminish, until on the 11th July it amounted to only 121 gallons.

Effect of rain.—A slight fall of rain on the 11th July, followed by others on 15th and 19th, had

such an effect that whereas the average yield for the first ten days in the month was only 130·6 gallons per day, the average daily yield for the last ten days was 142·9 gallons.

Effect of drought on quality.—The effect on the quality of the milk was also most marked. Thus, while in April of each year the amount of cheese made from one gallon of milk has been practically identical, and in former years had increased every month, yet in 1893, after slightly increasing in May, it actually fell again in June, and in July and August was less than in either of the preceding years. We are justified therefore in concluding that, both in quality as well as in quantity, the milk was diminished by the prolonged drought.

(To be continued)

The Garden and Orchard.

(CONDUCTED BY MR. GEO. MOORE).

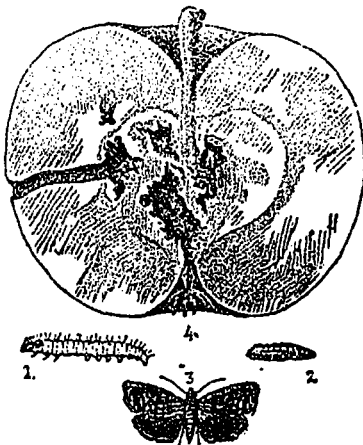
THE CODLIN MOTH.

(*Injurious insects, continued.*)

The caterpillars of this small moth are exceedingly destructive to the apple crop. They bore into the fruit, commencing at the blossom-end, and tunneling their way to the pips, which they eat. If an apple is split in halves, which has

THE CODLIN MOTH.

(*Carpocapsa pomonella, L.*)



1, Caterpillar; 2, Chrysalis; 3, Moth. All natural size.
4, Section of Apple showing work of Caterpillar.

fallen to the ground in consequence of the attack of the moth, the passage it has made to enter will

be found, and if it has forsaken the apple another hole by which it has escaped.

The pest is not confined to the codlins, but infests those apples which have deep open eyes and large calyces, more than those which have eyes more closed up, such as the Golden Russet and other late varieties.

The falling off of apples at various times throughout the summer is often attributed to wrong causes: want of vigour in the tree, or sudden changes of weather; but if the orchardist would take the trouble to examine carefully the dropped fruit, he would find that the injury had come from the codling moth, which had escaped and hidden, in order to produce another progeny for the coming spring.

Apples, as soon as they have fallen from infested trees should be picked up daily and destroyed. When gathered they should be examined to see if there are any holes in the eyes, and if there are, such should be directly discarded, and not be put into the fruit room; for if there are, the caterpillars will creep out, hide in cracks of the walls or flooring, where they will become moths in due course, and fly to the nearest apple trees the following spring.

In Australia, the codling moth is so destructive that the Legislature has passed an Act for its repression.

The moth (Fig. 3) is not quite three-fourths of an inch across the wings, and the body about one-third, of an inch long; it rests during the day, sitting on the trunks and branches of the apple-trees, or on railings, with its wings folded, and is so inconspicuous as to escape the notice of a casual observer.

It commences its activity at twilight, and again at the first approach of dawn, flying from tree to tree, and placing a single egg on the side of an apple when it is about half an inch in diameter, but sometimes it lays them on the stems and leaves; when we know that one moth will lay from 50 to 100 eggs, we can see how soon an apple crop can be spoiled. In about seven to nine days the caterpillars is hatched and begins to bore into the apple at its blossom-end, until it makes its way to the core, where it feeds upon the pips and the flesh around them, after which it bores its way out.

If the apple has fallen to the ground when the caterpillar comes out, it merely crawls away and makes a nest and hiding-place in some crack, or in

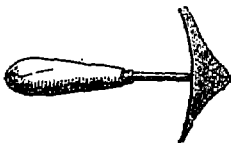
any rubbish or dead leaves. Sometimes it ascends another tree and conceals itself in a nest, which it constructs of little bits of bark, knit together with silk, and covered over with a gummy fluid. Should the apple be upon the tree when the insect comes out, it spins a silken thread by which it lets itself down to the ground, and then secretes itself, or else climbs another tree.

In order to prevent the caterpillars from ascending trees, bands made of old bagging or hay ropes should be tied tightly round the stems close to the ground early in the summer. Before placing these bandages, the bark should be scraped off. These traps must be occasionally examined and any caterpillars found in them destroyed; two bands, one about a foot above the other, will be more effective. It is now compulsory by law in Tasmania and California that all apple trees must be thus banded. Permanent traps made of wood or tin are also used.

Windfalls should be all cleared away as they drop. Sheep, pigs, and horses are useful in orchards to eat up the "drops" as they fall.

Apple-trees must be sprayed *after* blossoming with Paris green, 1 lb. to 200 gallons of water, which must be kept agitated while it is being applied. Or coal oil emulsion may be used, 1 part of oil to 14 parts of water with enough soft soap to make it mix. The latter recipe is the safer. Spraying must be repeated several times while the fruit is growing, because the moths do not all come at once. No rubbish or dead branches should be allowed to accumulate in, or near, an orchard.

The walls of the apple room should be kept well lime-washed and the floors well scrubbed with soft soap.



A useful bark-scraper.

Scraping the bark of apple trees, after which hot lime-wash, with a little sulphur mixed with it, will have a good effect, if well brushed in.



MINUTE INSECTS.

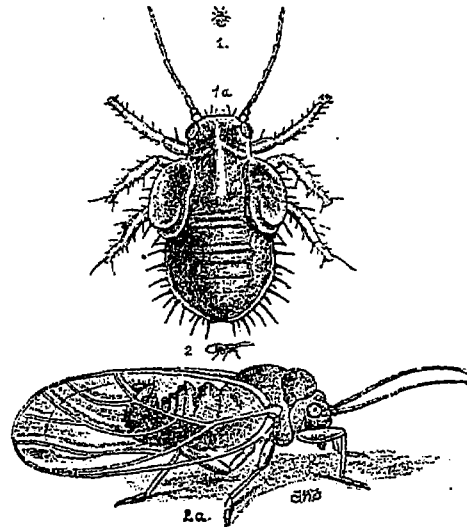
(Continued).

This insect is frequently the unsuspected cause of much injury to the apple crop. Its larvæ, which cause the mischief are so small and so closely concealed in the buds, that they are easily passed over by the casual observer. Their action is often confounded with that of caterpillars, weevil, or aphides which appear about the same season.

THE APPLE SUCKER. (1)

(*Psylla mali*, Forster).

(1) *Psylla* is Greek for a flea. Ed.



1, larva, nat. size. 1a, larva after third moult, much magnified. 2, perfect insect, nat. size. 2a, much magnified.

The larvæ can be seen only by careful inspection within the folds of the buds, actively engaged in sucking up the juices and thus preventing the development of the leaves and blossoms. The exhaustion of the sap, and the irritation set up by the larvæ, soon cause decay and prevent the blossom buds from becoming fruitful.

It is only recently that the Apple-sucker has been recognized as a serious enemy to the apple-crop, although an allied species, *Psylla pyricola*, has long been known to be very destructive in pear orchards.

If you notice quantities of little greenish yellow fly-like insects upon the leaves of apple-trees in September and October, which upon being approached leap on to another leaf, you may make sure of the presence of the apple sucker.

Pairing of the insects takes place at this season, and the eggs are laid usually upon the young shoots.

The eggs remain enchedded (?) amongst the fine hairs upon the outerskin of the shoots until the weather is spring like, when they hatched out the tiny larvæ, which at once gets in its destructive work on the nearest buds, and now they may be found feeding upon their juices.

The blossoms, instead of fructifying, shrivel up and fall off.

Their action also produces the thick fluid called "honey dew," which escapes from the larvæ and spreads over the leaves preventing them performing their natural function of respiration.

The suckers are difficult to destroy because they are protected by hard shells and ordinary solutions, of kerosene, turpentine, and potash, will not have the slightest effect. Infested trees should be thoroughly sprayed, as soon as the fruit is gathered, with disagreeable washes to prevent the insect from laying its eggs upon the shoots.

These washes or emulsions can be made according to the following formulæ :

1st :

6 lbs. soft soap.
8 lbs. extract of quassia-chips.
100 gallons of water.

2nd :

6 lbs. of soft soap.
4 gallons of coal oil.
100 gallons of water.

Mix the ingredients with a small quantity of water, churning them thoroughly together, then diluting them in the proportion named. The coal oil should be put in while the soap suds are boiling hot.

Carbolic acid may also be used ; 2 to 3 gallons and 6 lbs of soft soap to 100 gallons of water ; and Paris green may be added ; 1 lb. to 240 gallons of water.

Spraying may also be done in the spring when the buds are bursting, and in that case the quassia-wash would be most useful as it would make the food of the sucker bitter and unpleasant. The carbolic acid would have the same effect and the coal oil and Paris green would poison him.

In spraying for the prevention of other insects and fungi in the springtime, some of these unpleasant or poisonous drugs might be added to the other ingredients used.

(To be continued).

CURIOSITIES OF HORTICULTURE.

Notwithstanding the skill of our horticulturists, the semi-civilized people of the East seem to have outdone them in some curious processes ; as, for instance, the Chinese method of cultivating the bottoms of their lakes, and the Japanese art of dwarfing and distorting, into singular shapes, certain forest trees.

These objects are not beautiful, because Nature, untampered with, is always the most so ; but, as showing what can be done by man, they are simply curious.

The art of dwarfing has been kept a secret, but, now, some one, it is stated, has divulged it and solved the mystery.

The experiment is one which might afford amusement and is therefore worth trying ; the recipe for the process is the following :

Take an orange and make a small hole at one end, squeeze out the juice and scoop out the flesh or pulp, being careful not to make holes in the skin. Then fill the skin with very rich earth and in the centre plant the seed you wish to grow. Train the young shoot directly in the centre of the hole as soon as it appears.

The orange is then put in a sunny place and constantly watered. The seed soon begins to sprout, and soon the roots will begin to force their way through the orange's skin, and now the true work of dwarfing begins. These roots must be carefully shaved off with a sharp knife as fast as they appear. After a while, the roots will cease to grow, and when the roots stop growing the orange is coated over with varnish and planted in a pot or vase. The tree can be kept alive by water and will grow very little, if at all, for centuries.

CANADIAN FORESTRY.

It is gratifying to notice that at length an association has been formed with a view to protect and replenish our forests ; if this had been done years ago the country, instead of being stripped of every vestige of shade and shelter, would not only have presented a much more picturesque and attractive appearance, but the land would have been the better for the raising of crops and the feeding of cattle. Beside this, trees have, as we know, a salutary influence by means of their res

piratory organs, and fevers and agues are more prevalent where there are no trees.

Again, the total depletion of the forest-lands, without providing some means to replenish them, is like "killing the goose which laid the golden egg."

Some of our ancestors were wiser in their generations.

In the reign of King John a large tract of land was ceded to the burghers of the town of Sutton Coldfield, in Warwickshire, with the proviso that they might cut a certain amount of timber annually but must spend a certain percentage of its value in the purchase and planting of young trees. This has been done throughout the centuries, until now the forest is a much more fruitful source of income than at first.

The association is fortunate in having selected Sir Henri Joly de Lotbinière, a gentleman whose interest in the subject has been so marked, and whose example, set on his estate at Lotbinière by the planting of trees, has shown the great advantage of doing so.

Now the association has been formed under such promising auspices, it is the duty of every landed proprietor to become a member, take an active interest in its proceedings and whatever valuable suggestion, may be offered from time to time, by men who have studied the question of the amelioration of our forests and the perpetuation of our timber supply. GEO. MOORE.

The Grazier and Breeder.

VALUABLE SHIPMENTS OF Ayrshire CATTLE FOR CANADA.

(From the *Ayrshire Post*, Feb. 16th, 1900).

The Donaldson Liner *Amarynthia*, which sailed from the Clyde on Tuesday morning, had on board one of the most valuable shipments of Ayrshire cattle that has yet left this country for Canada. The animals belong to Mr. Robert Reford, Tredinnoch Farm, St. Anne de Bellevue, Quebec, and have been selected with considerable care and skill in the south-west of Scotland by his manager, Mr. Boden. In all, 16 head were purchased, but, curiously enough, 19 head were shipped, as three of the cows calved before they left Glasgow. Five first-rate specimens were secured from Mr. Wm.

Wallace, Mauchline, while as many more came from Mr. Thomas Howie's noted herd at Fairfield Mains, Ayr. Mr. Andrew Mitchell, Barcheskie, Kirkcudbright, contributed four from his famous stock, and Mr. James Howie, Hillhouse Galston, was represented by a beautiful two year-old heifer, at the head of the whole consignment was a splendid bull, "Lord Dudley of Drumsule," 3915, which was purchased from Mr. James Walker, Kirkmuir, Stewarton. The whole form a splendid shipment of the best class of dairy stock. The cows and heifers are, for the most part, exceptionally well bred, all nice colours, with big teats and bags, indeed special attention was paid to the milking qualities of each cow. They are all big and handsome, with stylish heads and horns, straight backs, and plenty of width and depth. Our showyard type of Ayrshire evidently gives the Canadian little satisfaction. He aims more at producing milk than beauty of form. The tight bags which many of our judges consider correct are regarded by him as pure nonsense, and small teats are scorned. From a utilitarian point of view, no one can say that in this he is wrong. "Lord Dudley," the leader of the gang is a brown and white three-year-old, and winner of three first prizes, and one second. There are many bulls which the country could have better spared, as his colour and breeding are first-rate, and his stock are very promising.

A splendid big cow is "Snowdrift of Barcheskie," 10,461, bred by Mr. Scott, Netherhall, Sandilands, and sired by the famous bull "Adjutant." Perhaps the best cow, however, is "Mayflower IV, of Barcheskie," 13,164, the first prize winner at Castle Douglas show last spring. She is by "Traveller's Heir," and is a splendid example of what a dairy cow should be.

A pair of heavy milkers are "Snowdrift 1," of Fairfield Mains, 12 655, and "Betsy 1," of Fairfield Mains, 12 659. They are both bred by Mr. Howie, and should pay the exporter well. "White Rose," 13,163 is also a grand cow, and the Auchinbrain two cows "Lizzie VI" 11,995 and "Polly of Mauchline," 13,237—both by "Sir Thomas of Auchinbrain" are a credit to the well-known herd from which they come. Amongst the three-year-olds queys the first place is easily taken by the unbeaten "Barcheskie heifer of 1899, "Lily V" 13,165. She is by the champion bull, "Douglas Chief of Hillhouse" and stood first at the Castle-Douglas, Ayr, the Royal,

the Highland, &c., last year. She dropped a nice heifer just before being shipped. Her neighbor "Queen Bess V," 13,166, is by the well-known bull "Mischief Maker," and she has also several points to recommend her. Another capital three-year-old is "Stanley 1 of Balmangan." Of the two-year-olds, Mr. James Howie's "Bluebell of Holehouse," 13,162 by "Traveller's Heir," perhaps shown the most promise, but there is also, in the lot a very nice one bred by Mr. Gilmour, of Orchardton, named "Tottie Kate II," 12,722. The yearlings are twin calves of the famous champion cow "Lady Flora" which won the Ayr Derby and everything else she has attempted since. The twins are not the least valuable members of this fine shipment, and if they have a tithe of the success of their illustrious dam their owner should be satisfied.

The animals go to St. John, N. B., where they will remain in quarantine for a couple of months, so that it will be about the beginning of May before they reach their home in Quebec. It takes a deal of pluck to import fine stock under these conditions, and it is to be hoped that Mr. Reford may have the pleasure of seeing all his 19 head safely landed.

CEDAR HILL JERSEY-FARM NOTES.

Producing Milk Fever.

Ed. HOARD'S DAIRYMAN:—My asking for a milk fever recipe has brought several letters and I see that several have asked for my method for preventing it, but as yet no one has given a recipe to produce it, unless Mr. Hilgert's sarcastic letter (1) may be called one; he jumps at the conclusion that I never had a good cow under my charge, so could not expect to have a disease that is supposed to only attack good cows.

What about the Jersey cows I have brought into the test according to the A. J. C. Club's rules? What about the herd of 100 head that I made produce 300 lbs. of butter each in Colorado during 1893, and coming down to the present time we have in our herd several cows that test 5% and 6% and give from 30 to 40 lbs. of milk daily, when fresh.

The *Dairyman* readers have read in past 10 years many reports, written by me, of herd per-

formances that I have had in my care, showing good cows are not strangers to me.

If Mr. Hilgert or any other dairyman will do as I do, he will cease to have the disease. I am with our cows as much as possible. I have my regular number to milk. I know every individual, see the mangers of every cow at least once per day, make a study of daily milk yields of each cow, look after the calves, yearlings and two-year-old springers, and in the case of mature springers, instead of starving them, we take special pains to give them the best of foods and care. I have no doubt that in the case of Mr. Hilgert, he has his night shirt on in morning when his cows are milked and fed, and a laundered one on at time of evening milking. A blouse and overalls, with a stool and pail, would reduce his 4 or 5 yearly cases to none.

A set of rules for preventing milk fever at Cedar Hill Farm would read like the following;

First. Give the herd bull good hard work daily. A tread power is the best thing.

Second. The calves from such a bull will be strong, hearty ones.

Third. Feed them right to continue the building of a strong constitution.

Fourth. Be one of the care-takers yourself; be with your cows; study them.

Fifth. Keep a daily record of every cow's milk; file it away.

Sixth. Milk every cow to the day of freshening; she was bred to give milk, so let her give it. I never heard of a case of milk fever in such a cow.

Seventh. Feed good foods, balanced properly to make every cow come fresh in the pink of condition.

Eighth. Don't expose her to sudden changes of weather; see that, her drinking water is warmed to 70 or 75 degrees in cold weather.

Ninth. Treat her as a mother; lose sight of her being only a cow, and, as a mother, nothing should be neglected to insure her comfort.

ANIMALIA.

ANIMAL ALTRUISM.

Editor Popular Science Monthly:

In G. J. Romanes's chart of the "Derivative Origin of the Human Mind" he marks "Sympathy" in the scale on the level or line 24 with

(1) See our last No. *Ed. J. of Ag.*

"communication of ideas," on which level or line is also placed "Hymenoptera."

The writer has not studied Mr. Romanes enough to understand his chart, and therefore cannot see why the *Hymenoptera* are there placed, except it be in that class of insects the communication of ideas is earliest seen. He does not note altruism in the chart.

It seems to me altruism is allied to "sympathy," and to the maternal faculty of affection. At first thought it seemed as if altruism might be the outgrowth of maternal love and regard. But two instances of its manifestation in members of a colony of domestic fowls appear to be adverse to that conclusion. These may be described in detail.

A relative of the writer, Mrs. R—, of Stockton, was occupied in 1881 with the care and study of several dozen chickens. One day she was feeding them meat cut in small pieces, and most of her feathered family gathered around and fed from her hand. But one little white pullet was too timid to come up and get her portion. A strong gray chicken, nearly full grown, and which sustained no family kinship to the other, seemed to observe and take in the forlorn situation of the one standing back, began to fight, and tried to drive away the cluster, as if to make room for the lagging associate. But it did not stir or move toward the feeding group. The gray, failing in that effort, boldly came forward, took a fragment of meat, carried it to the hungry chicken and dropped it at its feet, and then moved away, as if it had done a useful and friendly act.

On another and subsequent occasion, Mrs. R— was again feeding her poultry from her hand. As she appeared, they hurried out from under a sheltered retreat, and with natural eagerness each swallowed its coveted portion. But one Black Spanish member timidly remained behind under cover, though in sight. After devouring a few pieces of meat, a vigorous brown Leghorn seized a good-sized piece, ran to a corner, and hid it. She then went to the retreat and induced the backward party to go out. They two went to the place of concealed store, when the Leghorn brought forth the reserved morsel of meat and dropped it before her companion, which at once accepted the gift.

Here are two examples of the altruistic faculty developed in members of the body politic of domestic fowls. As these instances are found in

young individuals wherein the maternal faculty of love and regard for offspring has never been called in action, must we not conclude that altruism in them is an outgrowth of energies remote from the maternal characteristic? The immediate mother of those chickens was the incubator.

It is of interest to determine how early in the growth of mind altruism can be perceived.

A. S. HUDSON, M. D.

Stockton, Cal., April 1, 1889.

DO CATTLE COUNT?

Editor Popular Science Monthly:

Reading, not long ago, a sketch in our local paper, entitled "Can Animals Count?" said to have been taken from *The Popular Science Monthly*, recalls to my mind an incident that I have heard my father relate.

My grandfather Butterfield kept a hotel on the Green Mountains, five miles from Manchester, Vermont, more than a hundred years ago. It was his custom to salt his cattle every Sunday morning.

After vegetation started in the spring he would turn his young stock into the forest to get their living, being short of cleared pasturage.

These cattle would remain away a week, but would invariably come to the barn every Sunday for their salt, and after eating it would return to the woods again.

Now, if this does not prove that animals can count, it proves that they are creatures of very regular habits.

SUSAN M. B. STAPLIN.

Mannsville, Jefferson County, N. Y.

Note—In 1872, when we were living at Compton, a magnificent tom-cat used to come to the back-door of our house, almost every night, and cry aloud, until a 3-months' old kitten we had was let out, when the elder cat presented the younger with a field-mouse, which the latter immediately "collared" and greedily devoured. As the kitten was born at Joliette, there could have been no pre-natal connexion between the two cats. If this was not "altruism," what was it? *Altruism* (from *L. alter*, another) is, we need hardly say, the opposite of selfishness. Ed.

The Poultry-Yard.

(CONDUCTED BY S. J. ANDRES).

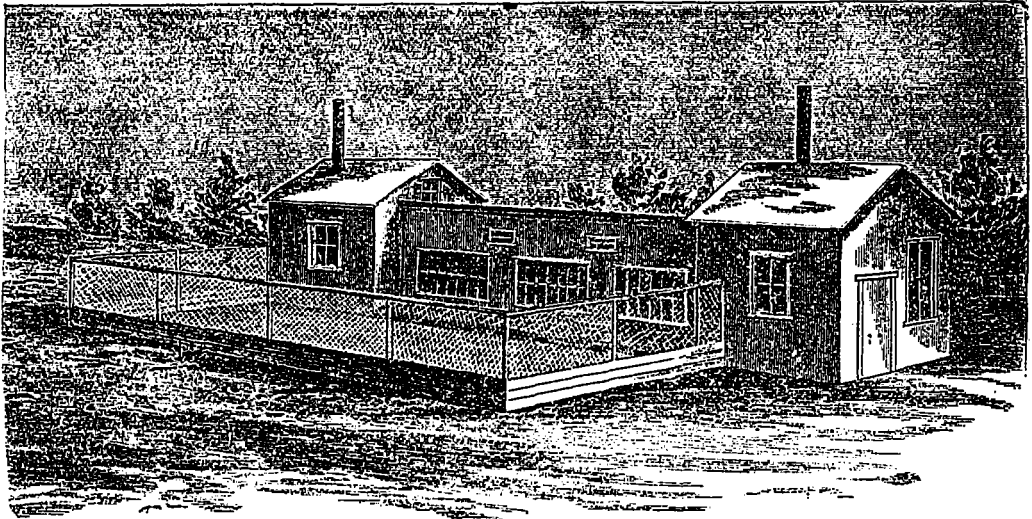
SPECIALLY FATTED POULTRY.

Killing, shaping and marketing.

Most of the killing in England is done by dislocating the neck of the bird by a sharp blow upon the corner of a post or block, and as the birds are picked with the heads hanging downwards the blood collects inside the skin about the head and neck. This gives a discolored, repulsive appearance to that part of the bird, although it mani-

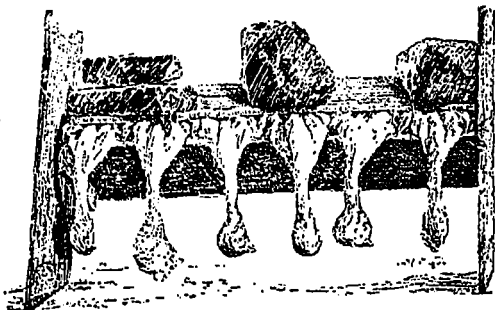
in the throat gaping open gives them a decidedly ghastly appearance. I cannot but think our American method of killing, by stunning the bird by a blow upon the head, and then bleeding from the mouth by a sharp cut across the roof of it, severing the veins there, is decidedly better, and the blood is saved for the manure pile. It is true that the blood collected in the head and neck of the English birds increases the weight, hence if they, were sold by the pound there would be a slightly greater return, but, as they are almost wholly sold by the piece (or "couple") the added weight is of no advantage, and the increased unlightness a disadvantage.

The birds should always be starved, (kept en



An incubator and brooder house.

festly adds to the weight of the carcass. In Belgium the throats of the birds are cut, and they



PRESSING.

(From *The Strand Magazine*).

are bled in that manner; but when the carcasses are displayed upon the market slab, that wound

tirely, without food) for twenty-four to thirty-six hours before being killed. That is, the birds for to-morrow's killing should be selected directly after the morning feed to-day, and no more food be given them. If those wanted for killing *the first half* of the day to-morrow be selected and set aside before this morning's feed, all the better, and those to be killed in the afternoon of to-morrow can be given the first feed (the morning feed) to-day.

This properly "starving" before killing is very little understood in this country, and is practised little if at all. Keeping the birds absolutely without food for twenty-four to thirty-six hours decidedly improves the "quality" of the meat, making it firmer and sweeter to the taste. Surely the

practice of starving before killing, being both beneficial and economical, ought to be fully understood by poulterers.

(To be continued.)

AN INCUBATOR AND BROODER HOUSE.

The illustration shows an incubator house (at the left) in which incubators are operated, and in which a stove for heating water is arranged, from which, if preferred, pipes may extend to the brooder-room for warming the brooders. The brooder rooms are in the shape of the shed portion with large windows in front and small covered runs extending out beyond the windows and below them, glass being used to protect against cold and to admit warmth and light. A large yard is also attached. The building at the right may be used as a feed and store house or for the occupancy of the attendant. The building may be of any preferred size.

S. J. ANDRES.

The Horse.

HORSE BREEDING

At the banquet given by the Canadian Horse Breeders' Association, a short account of which appeared in last week's issue, the Hon. Mr. Fisher, Dominion Minister of Agriculture, gave a most practical and thoughtful address on horse breeding and the conditions affecting it in Canada. We are sorry that we have not been able to obtain a verbatim report of his address in order that our readers might have the full benefit of it, and have only the gist of it taken from a few notes made hurriedly.

One fact that Mr. Fisher endeavored to impress upon audience was the very bright outlook at the present time for horse breeding carried on on intelligent and systematic lines.

The day of the horse is not pass as some seem to think. He is as much in evidence to-day as he ever was, and in fact, in several respects, occupies a more important position than for several years back. Recent wars and more particularly that in South Africa, have shown that the horse is a more necessary factor than ever before in modern warfare. Canada has already experienced a little of this new movement and orders have been received for horses from the British War Department. This

demand is likely to increase in the near future and to create a very large market for cavalry and and artillery horses.

The farmer is at the basis of horse breeding as well as other lines of breeding and, if Canada is to become a great horse-breeding country, everything possible must be done to educate the farmer in proper methods of breeding. There is no animal kept on the farm in which the science of breeding is so necessary as in producing the horse.

A fine horse is an example of breeding carried to its highest perfection. While farmers have types of other animals to breed up to, they have less of a distinct type in the horse. This may be due to the horse being a more complicated type. There has in the past been more indiscriminate breeding of horses than of any other animal. There has been too much changing about from one breed to another. We have some good breeders in Canada who have made a good name for Canadian horses, but there are too many who are working along haphazard lines producing no definite or distinct type.

To illustrate this Mr. Fisher referred to the indiscriminate breeding followed in Quebec of late years, and which had been the means of practically extinguishing the old reliable Quebec horse. The same thing had happened in the State of Vermont, where changeable breeding methods had almost wiped out the old Morgan horse for which that State was noted.

Success in horse breeding can only be obtained by breeding along definite and distinct lines, and not by changing from one type to another. Nothing can be accomplished by continually changing the line of breeding. It takes time to reach perfection. Having decided upon a line of breeding stick to it. If one man in a neighborhood is breeding successfully along one line, his neighbors should follow in the same line. By such a method districts would become noted for producing certain types of horses, and in this way would attract buyers of these types. One of the difficulties which the horse buyer in Canada has to-day is that there is no special line of breeding carried on in any one locality, and consequently he has to cover a lot of ground and travel long distances to get what he wants. This could be overcome by farmers in certain districts co-operating and arranging to breed along the same line.

In closing his address Mr. Fisher drew attention to the fact that very few of the young men in Ca-

nada know how to ride. This is lamentable. A young man who knows how to ride, and who does ride, learns to appreciate a good horse, and takes more interest in breeding and raising good animals. No better work could be done for the horse-breeding interests of the country than in training our young men, especially those on the farm, to ride. There are very few saddles used in the country to-day, and riding is fast becoming one of the lost arts. This should not be. The young men on the farm should be trained and encouraged to ride. It is from good riders, and those who know how to manage horses in the saddle, that recruits are selected for cavalry service.—*Farming*

THE DEMAND FOR HORSES.

During the course of an address on the horse and its market, before the Illinois Stock Breeders' Association, John A. Craig, Professor of Animal Husbandry in the Iowa Agricultural College, made the following reference to the increased demand for horses :

In 1892, when the sheep market was demoralized, I stood in the stock yards at Chicago and saw good, useful sheep selling for fifty cents a head. Feeling that the market was bound to react, it afforded me unusual enjoyment to advocate sheep husbandry at the time. Now that enjoyment is denied one because of the prosperity of that industry, which has brought to it many friends. The horse industry at this time is very nearly in the same position that the sheep industry was in 1892, with the exception that we are now beginning to see in the horse industry a reaction towards better markets. During recent years there has been an unusual combination of circumstances against the horse. The bicycle, hard times, over-production, and the formation of many companies to perfect automobiles, had their effect in depressing the market. These influences, however, have exerted at this time their full strength, and when as a result we see the horse continue to advance in favor, it is fair to assume that a turn in the tide has come about. It appears at this time that the future competition regarding the means of transportation is going to be confined to the machines that have been invented during recent years. All of these have done about as much as they can against the horse, and now it would seem that they have to fight out the question of supremacy among them-

selves. Since the agitation in favor of the bicycle and the automobile and kindred inventions, it has become the practice of some writers to deride the horse in every possible way. It is not my purpose as an advocate of the extension of horse-breeding to say one word against any invention which is likely to add to the enjoyment or the effectiveness of the labor of man. But I am satisfied that the present indications show that the horse is extending its influence as a medium of pleasure in this country and Europe. There is one paragraph in an article which appeared in the *Tribune* last Sunday that I wish to merely mention, as it carries its own interpretation with it. The writer, discussing the subject of the horse in favor again, says: "Last Sunday fifty saddle horses galloped past a house on East End avenue near Jackson park in twenty minutes. During the same interval one lone bicycle passed. Three years ago the proportion would have been about 300 wheels to one horse, or more probably none at all." This indicates the extent to which the horse as an agent of pleasure is being reinstated in this country. Just one other fact to show the growth in another direction. In 1892, 600 horses were exported to Europe. During the first nine months of the present year 25,143 have been sent to the same market; in the face of these facts we find that the production of horses almost ceased four or five years ago. Is it any wonder, then, that prices should have advanced during the past year? I feel certain in taking a fair view of the question during that time that the prices of horses have advanced 25 to 50 per cent., and I wish to put on record here that the prices are going to advance as much again in the coming year.

One of the difficulties which has attached itself to the development of the horse industry is the fact that our farmers and horse dealers have not a clear conception of the classes of horses which the market demands. These classes have been in existence for many years, and they are clear and definitely defined.

The market for horses is practically the same in regard to the nature of the demand as it has been in past years. There are three main types of horses that sell well, with the addition of another lately which is advancing rapidly in favor. The four types, then, that I wish to refer to are the carriage horse, the roadster, the riding-horse and the draft horse.

The carriage horse has distinctive features, pos-

possessing unusual symmetry, fulness of body and, above all things, coach or carriage action. He stands close to 16 hands high, upheaded, with smooth conformation, plump with muscle and having sufficient weight to easily move a heavy carriage. The action required in this type is the most necessary characteristic. It is not necessary to go into details of it further than to say that there is unusual folding of the knee and high-lifting movement, which indicates spirit and force, rather than rapidity.

The roadster, or trotter, or perhaps as the market knows it, the gentleman's driver, is a horse of a type quite different from the coach horse. He is smaller, trimmer built, appearing somewhat "racy" and is as perfectly mannered as the coach horse should be. His purpose is to contribute to the pleasure of some one who enjoys driving, and at times speeding with competitors. Such a horse should be able to show a rapid gait and maintain it, and at the same time be almost perfect in manners. The action of this horse differs considerably from that of the coach horse, as speed is one of the important considerations. Then with this there must be the ability to show as much speed as possible when called upon, without the aid of any artificial means of assisting the action.

The other class of horse which finds favor in the market is the saddle horse. This horse, in addition to being beautiful in conformation and perfectly mannered, should possess the five saddle gaits—the walk, trot, canter, rack or single foot, and fox trot. The education of the horse in this direction is the gift of genius and has its reward in the prices that are paid in the markets.

In regard to the prices of these three classes of horses there is not very much difference for the very highest type of each of them. They are all hard to produce in the highest degree of excellence, and as a consequence they have a high value in the market. These horses require a great deal of training and demand the best horsemanship to bring them out in the best condition.

The horse that seems to fit into farm production better than any other is the draft horse. The demand for weight is still as great as in past years, so that a draft horse to sell well must weigh from 1,600 pounds upwards and be of draft type. That is, he should be massively built, deep bodied, heavy in muscle and short in limbs, with feet properly constructed out of durable material.

Such a horse can be economically raised on the farm, and owing to the demand for him he finds ready sale on the market. He may not be so perfectly mannered nor so true in action to bring his full value in the market as the other types I have mentioned, consequently he can be produced cheaper and with less risk than the others.

In the production and preparation for market of the different types of horses the farmer's advantages enable him to produce them cheaper than anyone else. Horse labor on the farm is necessary and there is every reason for believing that to get the best results in breeding, some labor for the brute stock is desirable. The only horse I think the farmer can completely produce, that is to breed, break and market, with the most profit, is the draft horse. Not many farmers have the ability to finish the carriage horse, the gentleman's driver or the saddle horse. The farmer may breed with great success the road horse and the riding-horse, and make it profitable, if he is content to take a fair price for them, and let the dealer market them and completely finish them for market. In breeding draft horses the farmer is able to secure all the price in his labor. To make the most out of it, the breeder should be guided by the principles of breeding, which are a guide to the production of horses in the same sense as the railway time table is a guide to travelling.

The Flock

HOW I FED MY SHEEP FOR THE PROVINCIAL WINTER FAIR.

(BY JOHN JACKSON, ABINGDON).

The sheep we exhibited were all pure-bred Southdowns. Beginning with the three shearing wethers, dropped about the middle of March, 1898, these had no extra care before going out to grass where they ran with their dams without other food till the 1st of July. They were then weaned and put on at stubble, were 1½ lbs. of rape seed per acre had been sown with the oats. About the 20th of August these were castrated, being the culls of the ram lambs. Castrating was done by cutting off the end of the scrotum and taking out the testicles in the ordinary way, pouring in a 20 per cent. solution of carbolic acid,

after which the lambs were kept in a rather dark box-stall for ten days. It is important that the operation be done as quickly and with as little excitement and worry to the lambs as possible; better results would be obtained by castrating them when two or three weeks old. These lambs were again put on the stubble. The *rape* made a fine growth through September. About the middle of October they were put inside, fed a mixed feed of oats, bran and a little oil cake, commencing with $\frac{1}{2}$ lb. and increasing to $1\frac{1}{2}$ lbs. per day, with two or three lbs. of mangolds and what clover hay they would eat up clean. This was continued for six weeks, when they were shown as lambs at the Provincial Fat Stock Show, Brantford, 1898, where two of them took 1st and 2nd in their class, and the trio were 1st for pen of three. They were then run through the winter with the ewe lambs on about $\frac{1}{2}$ lb. of the mixed feed and two lbs. of mangolds with hay for about 150 days, and again turned on grass without grain. The one that won 1st in his class at London, the sweepstake in the Southdown class, and the grand sweepstake of the show, was run in this way till the middle of October. Having no *rape* this year, owing to drought, for part of the time the pasture was very poor indeed. The other two wethers, one of which was 3rd in his class and the other 5th in the dressed carcass class, were put in with the show sheep on the 8th of July, getting an average of 1 lb. of mixed grain feed per day, with green food, vetches, peas and oats and was out in pasture at night till about the 8th of August, after which they were kept inside and clover hay was substituted for the green food. These two were shown for about six weeks at the fall shows which brought them to the middle of October.

The wether lambs born in April, that won 1st and 2nd prizes in their class, were castrated when young, and run on the pasture till and after being weaned, without grain feed up to the middle of October. The other one shown, which was in the 1st prize pen of three, was castrated in November (but this practice is not recommended).

The six ewe lambs were dropped in March and April, fed in the ordinary way till they were turned on grass about the 1st of May, and got nothing more till weaned the 8th of July. Four of these were gradually fed the grain mixture till 1 lb. per day was reached with green food as above, then taken the round of the fall shows, which brought them to the middle of October.

The other two (which were twins), one of which won 1st prize in the class, ran on the grass and stubble till the middle of October. The lot were awarded 1st, 2nd, and 3rd in their class, and 1st and 2nd for pens of three. After the middle of October up to the time of the show, some 56 days, the whole lot were kept inside on clover hay, 3 lbs. of roots, and an average of $1\frac{1}{2}$ lbs. of the mixed grain feed per head a day.

COST OF THE GRAIN FEED.

To sum up the results, we find the grand sweep stake wether was in prime condition, and from birth, in feeding and fitting for the two years' shows, had consumed about 200 lbs. of grain fed at a cost of 1c. per lb., or \$2. The other two wethers in feeding and fitting for the two seasons including the fall shows, had consumed about 300 lbs. of the grain feed each, or \$3. These were too ripe and overdone, and when put on the block were entirely too fat to win, one dressing 66 per cent. of his live weight, and that without shrinking, being within 1 lb. of the heaviest carcass in the show.

The 1st. and 2nd. prize wether lambs were in prime condition for the Christmas market, and had consumed only 70 lbs. of grain feed each at a cost of 70c.

The four ewe lambs fitted for the fall shows had consumed 170 lbs. each of grain feed at a cost of \$170 each. It will be seen that, in knocking about for six weeks at the fall shows, a large portion of this would be lost, from a mutton standpoint. The other two lambs, which included the 1st prize winner, consumed only 70 lbs at a cost of 70c. each for the grain fed. This leads to the conclusion that six weeks is about the right length of time to feed lambs to put them in prime condition for the market. It must be borne in mind that well-bred lambs (not necessarily pure-bred) of good quality feed at less cost per pound than rough ones of any breed; and that quality counts far more to the feeder than size, as well as being worth more per pound to the consumer.

It is difficult to arrive at the exact value of hay and pasture consumed; but, in this case, Southdowns being such small consumers, especially when on a good feed of grain, it would not figure very high. The result goes to show that the most profitable time to market sheep is before they are a year old. They will gain more in a given time

up to that age than after. As an illustration and approximate estimate of the profits in feeding well-bred lambs, on the 23rd of October, when we had got these six ewe lambs fairly started to feed, we weighed them, and they ran from 87 to 108 lbs. each, or a total of 568 lbs. for the six; we weighed them again Nov. 29th, when they went from 105 to 130 lbs. each, or a total of 705 lbs., an average gain of 23 lbs. each in 37 days. This would add to their value nearly three times the cost of the grain feed consumed in that time. Another way of arriving at the profit is to take, for example, these six lambs, their average weight 117 lbs. at 5c. = \$5.85 each. and deduct from this the cost of grain and roots fed, which would be about \$1 each; this would leave a good margin on the rough feed in favor of the producer.

Swine.

THE BACON HOG.

To the Editor of FARMING :

Will you allow me a short space in your paper in which to reply to Mr. T. Russell's attempt to answer my communication with reference to the condition of the pork trade as we find it to-day? Now, I am sure that in both my letters I stated that I had never attempted to produce the animal, (or rather the caricature of a hog that so many have to their cost, tried to produce) but have stood outside and watched results, so Mr. Russell's inference that I am among the victims of that craze has no foundation. Mr. Russell has given what he says is his idea of the bacon hog. Unfortunately I have seen exactly that same description a score of times, in fact it is an exact copy of the words of one of the packers and repeated by the speakers at the Institute meetings. Mr. Russell has learned his lesson well, like a good boy; then why does he not practise what he has learned, and also what he preaches. He shows the fattest hogs of any one exhibitor at the different fairs in this section of country. His men have said that he is obliged to keep them showered with cold water during the summer. Is that the long, lean hog to which he refers?

I regret that Mr. Russell has laid aside all rules of business courtesy by endeavoring to advertise

his stock at my expense in his letter. The hogs of mine to which he refers were bred from Tarnton Duchess, a splendid sow bred by Mr. Leask, and which I kept until she could not eat from loss of teeth just because she was such a good breeder. They were sired by Mr. Russell's fine boar, Model Duke, and some by Mr. R. Vance's boar, Crown Prince.

Mr. Vance's herd of hogs is too well known to require any remarks on their behalf from me. Mr. Russell has met him on several fair grounds. I wonder if he has had any sympathy for himself on those occasions.

Mr. Russell's attempt to advertise his own stock by ridiculing the stock of another breeder is, I repeat, unbusiness like and must inevitably react upon himself.

I stated that I was not trying to raise a hog for the bacon trade: perhaps some would like to know what I do with my pigs. Those that are not sold for breeding purposes I kill at nine or ten months and cure in sides, for which I have a local contract for all I can supply of good well-fattened stuff. For this I get ten cents for hams and one cent more than the sides can be bought for in Toronto, as the buyer says the bacon he gets there is too thin. The shoulders we use at home. The heads and scraps we make into head-cheese for which we obtain seven cents per pound.

I notice that at the recent test of bacon hogs the Essex stood out in good shape. Now this was a breed of hogs that was specially mentioned (in an article by one of the packers) as a breed that never could be of any use whatever as a bacon hog, and yet in a few months we find it near the top. If that is not contradictory evidence I fail to see what is.

R. L. HOLDSWORTH.

Port Hope, Ont.

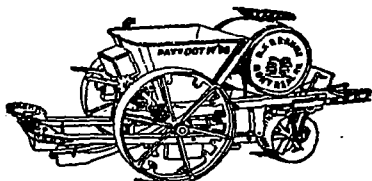
NOTE.—We have an enquiry from a Quebec reader asking for information as to curing bacon and pork in small quantities as described above, and would be glad if Mr. Holdsworth would send us an outline of his method for publication in these columns. EDITOR.



There are 186,000 miles of Railroad in the United States. If the farmer could see all the McCormick Machines at work this season from the car window, while travelling this tremendous journey he would see 10 Machines each mile. This enormous output is caused by the building of the Best Machines in the world by the

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Reaume's Tobacco and Cabbage Planter



One of the finest inventions of the Nineteenth Century. For the last two years, tobacco culture has been one of the chief industries of the Province, and likely will be on the increase for the year 1900. The planting process was always slow and I thought it wise to build and Patent a machine that would improve and alleviate the planting work.

This machine can plant from four to five acres per day. It will plant tobacco and cabbage, at the will of the operator; two to two and a half and three feet apart and distribute water in every hill.

The advantages of this machine are to deposit the root of the plant in water and cover it with dry earth, thus avoiding the baking of the earth, occurring principally when planted by hand. Experience has shown you that the tobacco plant planted with this machine grows better than by hand. This machine has been fully tested in the spring of 1899 and has given the greatest satisfaction, winning the approbation of all who saw it working.

All persons wishing to buy this marvelous machine will do well to place their orders early as the demand will be very large this year.

First ordered, first served. For further informations as to terms, prices, etc. apply to

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How to increase your crop 200 p.c. and have good clean fruits and vegetables? Our Catalogue and Treatise on spraying, which is sent free on request, will teach you how. Headquarters for Province of Quebec for the "Spramotor" Spraying and Whitewashing Apparatus

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Illustrated Circular and Price List free.

F. W. JONES,

BEDFORD, QUE.

Protect your Trees Against Caterpillars.

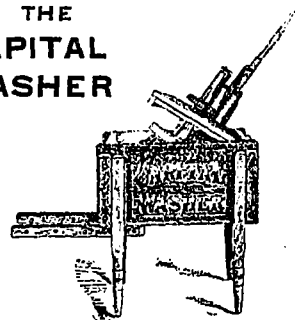
Found at last the only genuine and practical way to fight the always growing plague of the caterpillars, which is the terror of our farmers and the devastation of our orchards and forests! Until now every effort to this end failed on account of various reasons. The principal reason was that the means known to check the plague were costly to be put in practice by the farmers. I am the inventor and sole owner of the "Tree Protector," patented under the No. 64555. This Protector is made of tin and offered at a low price, within every one's reach. It is adjustable to every tree, it can be used on the same tree during 20 years. Saves much work, and nothing is equal to it for the protection of trees. It must be seen to be appreciated to its real value. I beg of every farmer to apply to the secretary of the "Agricultural Society" of their locality for every informations concerning this "Tree Protector" or write to me. I will send a printed circular to every person applying for. Correspondance solicited. Don't delay to protect your trees this spring.

J. E. JANELLE,

Inventor and Owner of the Patent No. 64555.

St. Philippe de Laprairie, Que.

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