

vated; and if dry weather, would roll again; then about a week before planting would harrow both ways, and if it was still dry, would leave it until I was ready to plant and then roll, and follow with double horse planter, planting 3 feet 8 inches each way, 5 grains per hill. By planting in hill, I would plant one bushel on five acres; if drilled, plant one peck per acre. Soil clay loam with clay subsoil. M. A. S. Kent Co., Ont.

DAIRY.

Cleanliness in the Dairy.

Notwithstanding all that has been said about the scrupulous cleanliness necessary in the care of milk, it is astounding to see how many farmers come short of the requisite standard. "Professional dairymen," as a rule, are more particular. They have it impressed upon them that nothing but the best will do, and are frequently visited by inspectors who are able to instruct them, if necessary, in the details of their business. With the farmer, on the other hand, there is a tendency to "let well enough do." Not that the farmer is any the less "clean" naturally than the dairyman, be it understood. The difference is, rather, in this, that the farmer, too often, has not had the science of the matter explained to him, and cannot bring himself to realize the existence of dirt that he cannot see. If his stable and cows are fairly clean, and if his milk-pails, cans or separator and strainer cloths look so, he cannot see the sense of all this brushing and scalding and fol-de-rol which the papers and experiment station magnates would have us follow.

Nevertheless, there is sense, and very great sense, in all this fol-de-rol. The very worst kind of dirt is often invisible; who, for instance, ever saw a cholera microbe? Yet, the crevices of milk-pails and meshes of strainer cloths, unless treated to this scalding, and the hair of the cows and clothes of the milker, unless treated to some cleansing or preventive measures, are filled with just such microbes, not cholera microbes, of course, but others disastrous to the flavor and keeping qualities of milk and butter, and often to health itself. It is well known—or ought to be—that milk is notoriously liable to absorb odors and germs of all kinds, and that when they are once in, it acts as one of the most fertile hotbeds in existence for their multiplication, hence the necessity for keeping them from falling into the pail during the process of milking, or at any later stage.

These microbes, or bacteria, are, indeed, exceedingly small, yet they may be readily seen with a powerful microscope. About ten different species have, in fact, already been discovered in milk. A few of these are not harmful, but positively beneficial, but there are others which wreak endless mischief, soon giving evidence of their presence by foul smells and flavors. The following cut shows a few of the harmful bacteria, as seen when magnified.



(1) Bacteria producing sourness. (2) Bacteria producing slimy milk. (3) Bacteria producing putrid or rotten smell and taste.

Most of these reproduce themselves simply by division. For example, put one of Class 1. in a bowl of milk at a suitable temperature. It immediately begins to elongate, then contract in the middle, finally breaking off into two separate parts, each a new bacterium, in which the same process goes on. The time required for a bacterium to become two bacteria is only about twenty minutes, hence it may be readily seen that in a very short time thousands or even tens of thousands of these little mischief-makers may be present in even a tablespoonful of milk. No wonder, then, that milk, and butter, too, are often unfit to put in one's mouth.

Now, scalding water and sunlight are two of the best microbe-killers known. For this reason, then, are the well-known directions in regard to care of milk vessels issued—wash all milk vessels first in tepid water with a brush, then scald with absolutely boiling clean water. Don't use the same scalding water for all the vessels, pouring from one into another, but put fresh water into each one. Afterwards, when not in use, keep the tins sitting in a clean place in bright sunshine. The same scrupulous washing, scalding and sunning is also necessary for strainer cloths and parts of the separator. Remember it is absolutely necessary that all microbes be killed, and this cannot be done otherwise.

One cannot, of course, scald one's hands and the cows, yet much may be done to lessen the number of microbes floating around while one is milking, and keep them from getting into the milk-pail. In the first place the cows should be

well curried and brushed shortly before milking; at times it will be necessary, also, to wash the udder well with warm water. In the milking place the air should be as pure as possible, free from barn odors and dust. The clothes of the milker should also be clean, and his hands well washed with soap and water. The teats of the cows should never be wet, although a slight rubbing with vaseline is not objected to. In order to keep particles from falling into the milk-pail, many devices have been resorted to, such as the Gurley milk-pail with an absorbent cotton top, which has already been fully described in the "Farmer's Advocate." When one has not such a device, the method recommended by a New Zealand dairyman may carry a suggestion. He recommends that the streams of milk be directed to one spot, preferably on the side of the pail next the milker. By doing this a froth is quickly formed, and such particles as may fall on it are not beaten down into the milk, but are held on top of the foam, which should be removed before straining.

After milking, the milk should be strained as soon as possible, cooled down rapidly, and kept as cold as possible until used. Bacteria do not multiply rapidly in the cold, hence this precaution. Neither milk nor cream may be kept in a cellar or milkhouse in which the air is not absolutely sweet and pure. Wherever there is the slightest suspicion of foul smells or mustiness, there are bacteria holding high riot all through the air, anxious for a chance to pounce into so favorable an element as your milk can or your cream crock. . . . Just one more observation—When milking, milk steadily, gently, and not too slowly. Be kind to the cows, feed them well, and see that they have plenty of pure water and salt. IT PAYS. EYE-OPENER.

The Farmer's Cow.

To the Editor "Farmer's Advocate":

As I see in your valuable paper a few questions concerning the breed and grade of dairy cows, I would like to say, in reply, that we have tested a number of breeds of cattle in our dairy for making butter, and would say of all the breeds the Holstein-Friesian cow is the best. The history of the Holstein breed of cattle during the past three years has been one of splendid achievement and record-breaking events. The Holsteins came to this country twenty years ago from that slow-going country, Holland, where the famous butter of the world is made, and these are the cattle they use; and that country also holds the market for bacon and eggs—so they are not so slow. Investigations by the Government of Holland show that the cows of that country produce, on an average, 7,396 pounds of milk annually, which yields, on an average, 321 pounds of butter. Are the Hollanders and Danes doing anything Canadians cannot do? One of the most striking illustrations of the value of special-bred cows is a picture of two cows, one a Holstein, the other a Shorthorn. The Holstein made a net profit from butter of \$48.94; the Shorthorn made a net profit of \$17. This shows that, while the latter is a beefy animal, she is defective in some important points. The greatest arguments of the advocates of a Shorthorn cow, is that she is suited to a great number of farmers who are not specially dairymen or beef breeders, and who want an animal which will give some milk, and at the same time raise salable veal calves or beef animals. Now, as every farmer has an interest to some extent, can he afford to keep an animal that makes but \$17 profit from butter, because she has a calf that the butchers want? It would take a good calf to make up the difference between the Holstein and the Shorthorn—\$31.94 a year. This is a dairy country. We cannot compete with the Alberta country, where it costs but \$4 a year to keep a beef animal. I suppose no breed of cattle has been so badly misrepresented as the Holsteins, but "truth crushed to earth will rise again." The way to get a good dairy cow is to lead your herd with a good pure-bred Holstein sire. If you cannot afford to keep pure-bred cows, the grade is within reach of all. She will give a large flow of milk, testing well in butter-fat, and where the butter is made on the farm, you have lots of milk for pigs and calves. The Holstein will milk ten months in the year. She has proved to be the poor man's cow, and in place of men saying I cannot afford them, you cannot afford to be without them, and we see men that say the worst of them, at sales paying \$10 or \$15 more for grade Holsteins than for other cows. Do not suppose that, because I have spoken in favor of the Holsteins, I have some for sale, for this is not the case, as we are buying them and breeding every year. But, for ability to perform at the pail, they rank second to none. Thanking you for your space.

RUSSELL MACLEAY

Leeds and Grenville, Ont.

IF YOU HAVE A FARM FOR SALE OR WANT A SITUATION, PUT AN ADVERTISEMENT UNDER THE HEADING OF "WANT AND FOR SALE" IN THE "FARMER'S ADVOCATE."

POULTRY.

Care of Sitting Hens.

Assuming that the hens when set were confined to the nests, and they should be unless it is certain that they will not leave them (some hens are so quiet that there is practically no doubt that they can be set anywhere, and from the first be trusted to come off to feed and go right back of their own accord), they should have an opportunity to leave the nest within twenty-four hours after being set, and if they do not come off of their own accord should be taken off, for if they do not leave the nest and void their excrement now, they are almost certain to foul the nests before the corresponding time on the following day, and during the first days of incubation the change of conditions and food often produce a disturbance of the bowels, and for awhile some hens will be loose and unable to retain the excrement as long as they will later. Hence, even if a hen is not hungry, and eats little or nothing, it is important to have her off the nest daily at first.

Hens that are handled without any trouble may be let off the nests at any time convenient for the attendant. With hens that are inclined to be shy, the easiest way to break them to return promptly to the nest in a strange place is to let them off just long enough before dark to give them time to feed. They will often return to the nest quietly at this time, when if let off early in the day they would make a great fuss, and if handled roughly give the business up altogether. At dusk hens that do not go back of their own accord are more easily caught, and settle down quietly when returned to the nest.

Having returned to her nest of her own accord, a hen may, as a rule, be allowed to leave it at any time convenient for the attendant, and unless there is something wrong with the hen or the nest, will generally go back within fifteen or twenty minutes, which is about as long as it is safe to have the eggs uncovered in cold or very cool weather. On bright warm days, hens may remain off the nest half an hour to an hour without the eggs being any the worse for it. Indeed, the general rule is that the colder-blooded hens stick closest to the nests, while the hot-blooded ones give so much heat to their eggs that the nest gets uncomfortably warm, and they leave it for their own comfort, and instinct seems to prompt them to let their eggs cool longer than the cold-blooded hen does.

When many sitters are in the same room it might cause trouble to release them all at once, especially if they came from different flocks. There are several ways of keeping things working smoothly.

If the hens were all set at the same time, and all, or any considerable part of them, are so shy that it is advisable to let them off late in the day, the attendant can watch them while off, and interfere if they go to fighting. If he does not wish to watch them daily he can, within a few days, arrange to let them off at different times in pairs or small squads, leaving the more troublesome ones to the last.

If, as is the case on most small plants, the hens set in a pen are set a few at a time, they are broken to return to the nest in the order in which they are set, and when new hens are set the others can be released at intervals earlier in the day.

On a larger scale of operations, if several rooms or pens are required for sitters, they can be prepared at the same time, a few hens set in each, then a few more, and so on until filled. This admits of gradually breaking in a large number of sitters to the desired routine without having to watch them when off the nests. Thus it is possible to establish a routine of releasing sitters which will enable one to do all the work of caring for them as he goes about his other work, yet take so little time for it that he never feels it as a burden; in fact, hardly notices it.

The routine just described will apply when up to twenty or twenty-five hens are sitting in the same place, but with larger numbers together, as there often are when nests are several tiers high, it becomes necessary to let many hens off at the same time, watch them to some extent while off, and return them to the nests after a sufficient time off has been given them.

I have always had better hatches, on the whole, when I kept nests closed, except when the hens were off for food, etc. By doing so, one is sure that no nest is uncovered too long, and no serious interference of hens going on without his knowledge. Making this the rule insures against the most common causes of spoiled eggs. It is one of the little things that it pays to do, and the rule should be broken only in emergencies. —Farm Poultry.

Make the Feathers Fly.

Sir,—It is about time somebody had the courage to "speak out in meeting" on the subject of the poultry prize-lists at our leading shows, as you did in last week's issue, and I beg you will turn on still more light. The way public money has been frittered away on these useless fancy breeds is a standing shame and a detriment to the great mass of breeders of useful sorts of poultry. But you did not go far enough, Mr. Editor, in simply referring to the two Provincial (Ontario) Winter Fairs. There are several other large exhibitions, equally great sinners. Make the feathers fly, sir, until the poultry prize-lists generally are radically reformed, and you will have the thanks of

DISGUSTED POULTRYMEN.