

the animals. As it rises, cold air will rush in to supply the vacuum. Some provide registers near the floor for the exit of the heavy carbonic acid gas.

Mr. Isaac Usher, of Thorold, makes the following suggestion: Where the feed-alley runs to the end wall of barn and is raised six or eight inches higher than the manger bottom, run a line of tile from outside through the wall and along under surface of floor in centre of alley. Opposite the cattle in each stall, run a branch tile just to the face of the manger to admit fresh air; ample means for the exit of heated air to be provided above.

We invite correspondence from our readers on this subject. Please state what difficulties you have met in getting rid of foul air and introducing a fresh supply, especially in cold weather. Describe, for the benefit of other readers, the plan of ventilation that you have found most satisfactory, giving a drawing of same, if necessary.

## DAIRY.

### Milking Machines.

Numerous patents have been taken out for machines which were thought to be better and cheaper extractors of milk from the cow's udder than the human hand, but until quite recently attempts were not successful, although each of the various forms of apparatus introduced one after another came nearer and nearer what is now considered a fairly successful milking machine. The first recorded attempt to draw milk from an animal other than by the lips or hands was in 1836, when Wm. Burton patented the use of the milking-tube or catheter, which, in particular states of the teats, are very useful, and to some extent have remained in use to the present time, although for general milking they are not to be thought of.

In 1863 a tube, combined with a pump, was patented. This tube was inserted into the teat, and in the same year another tube machine was invented, into which the teat was inserted. This is the first mention we have of what is known as the teat-cup. This machine, invented by Gedge, had a cup for each teat united by rubber tubes into one tube connected with the pail. Improvements were made from time to time upon this machine which acquired considerable popularity and patronage.

In 1889 one Murchland, of Kilmarnock, took out a patent for improvement in apparatus for milking cows, in which, in addition to the teat-cups and pump of earlier machines, it also had an accurate arrangement for regulating the vacuum.

In 1891 the Nicholson & Gray machine was brought out, which had all the desirable points of former machines, as well as an improved plan for regulating the vacuum, which was attained by the use of a weighted valve, on the same principle as the steam safety valve, only inverted, however. The milk drawn by this machine was conducted into one pail between every two cows, with strips of glass in the side of the pail, through which the height of the milk would be seen.

In 1892 a machine was patented in Denmark, which is quite of a different kind from any of those hitherto described. In it the teat is clasped between two small rollers, which move up and down the teat, which, in the downward movement, press the teat between them, but remove the pressure in the upper one. This machine never came into practical use.

In 1893 Struthers & Weir, of Lanarkshire, obtained a patent for an improved apparatus. Besides drawing off the milk by suction, this machine also does it mechanically. The teat-cup has an outer case of tin, or other strong and light material, and an inner one of rubber. In the bottom of each teat-cup is a simple valve, which automatically closes the moment the cup is knocked off. When the machine is attached to the udder and the vacuum is turned on, the top of the teat-cup takes a firm hold of the under side of the udder. As a rule, the milk begins to flow at once. With nothing to attend to but the milking, an active person may look after from four to six cans, and by the time these are all put on, the cow on which the first was placed will likely be milked. This can is then taken off, the milk emptied, and the machine is put on another; by this time the second cow is milked, and so on through the whole herd.

**Machines in use.**—The only machines now in use to any extent are those of Mr. Murchland, and Messrs. Shiels and Elliot. The former's first patent was taken out in 1889, and during the summer of 1890 a few cows were regularly milked at Haining Mains. During the two following winters, something like half a dozen sets were erected, principally in North Ayrshire. In no instance was entire herds milked with these machines, as entire satisfaction was not given, but several improvements, which have since been made, have brought the machines into more general use. The power used for some time at first was hand-pumping, but Murchland has introduced a small oil engine which can be kept running at full power, for from half to three-quarters of a penny per hour for oil, and which seems likely to entirely replace hand-pumping, as one of them has through one summer driven the apparatus for sixty cows, and is said to have given entire satisfaction. All the users of this machine seem quite satisfied that their cows are yielding as much milk when milked mechanically, as when the milking was done by hand.

Messrs. Shiels & Elliot's apparatus has not as yet had such an extended or exhaustive period of

trial as that of Mr. Murchland, although where it has been used people seem satisfied with its work.

Now, what effect these machines will have on the dairying industry, is a question which will soon be seen in England and Scotland, as the manufacturers are being crowded with orders, which must work a revolution in the industry. The actual every-day work of milking in a big herd is no small nor unimportant item, which, if it can be done as cheaply and satisfactorily as the testimony of those who use them bears out, we expect an increase in dairy products which will more than supply the demand.

## GARDEN AND ORCHARD.

### Marketing Small Fruits.

BY ELLIS F. AUGUSTINE.

One of the most important points in successful fruit-growing is to have all varieties gathered and marketed at the right time; but with no other class is this as essential as in the case of small fruits. It is a great mistake to allow small fruit to become over-ripe before picking, and especially so if shipping to distant markets; but it is just as great a mistake, and one more commonly practiced, to gather it before it has fully matured. This is especially the case in regard to strawberries, as is evident to the most casual observer who visits our town and city markets; and it is small wonder that complaints are so frequently made by intending purchasers, and extra prices are willingly paid for choice, uniform lots of perfectly matured, full-flavored fruit, while inferior lots are a drug on the market.

In marketing, arrangements should be made to have all fruit in the hands of consumers within 24 hours after picking. If this be done, and care be taken to have every shipment of the best possible quality and even brand throughout, put up in clean, well-filled packages, no fears need be entertained as to the result. But to secure this a full force of reliable pickers must be kept constantly at hand, and great care exercised by the overseer that no imperfect fruit is placed in the boxes, as a grower may be never so honest, if his pickers are unreliable and fill up the boxes with leaves and crushed and dried-up berries, and then top off with the largest and choicest fruit, his reputation will soon be irredeemably ruined.

But the observant small-fruit grower will soon discover that it is not always in the large cities that the most satisfactory and remunerative markets are to be found. There are hundreds of towns and villages where the people cannot get half a supply of choice fruit at higher prices than are paid for it in the cities. This may appear strange, but it is nevertheless true, as the writer has learned from personal experience, for after shipping to commission men in cities, empties have sometimes returned with shipping tags attached bearing the address of grocers in small towns many miles nearer the producer's home than were the first points of shipment. This may be accounted for by the fact that all extensive growers ship exclusively to large markets, while smaller ones are left practically unsupplied. The method which we now pursue (and it is one which might be most profitably followed by all small-fruit growers) is to take each forenoon's picking to our local towns and deliver direct to consumers, and then ship the afternoon's picking by night express to agents in cities and have it distributed to consumers early the following morning. This secures good prices all round, and ensures all fruit being placed in the hands of consumers while still fresh and in the best possible shape. If all growers would follow this method and offer for sale none but first-class fruit—or else grade according to quality—and then place themselves in closer relationship with consumers, our markets could be developed to an extent at present undreamed of. But for some time this need scarcely be looked for, as there are always a number of careless, unprincipled persons engaged in every vocation. But these will eventually be crowded out by their more honest, careful, energetic competitors. Consumers are quick to find out and patronize reliable producers who offer for sale nothing but articles of the very first quality; and time will bring about in this case, as it is doing in that of all others, the survival of the fittest.

### Fruit Prospects.

Since the recent hard frosts several prominent fruit growers in different parts of Ontario have written us as to the extent of the injury to the fruit crop.

Mr. L. Woolverton, Grimsby, Secretary of the Ontario Fruit Growers' Association, writes: "The damage in the vicinity of Grimsby is not so great as was supposed. A strip of about a mile along the lake seems to be especially exempt from the effects of spring frosts, while the young grape blossoms on the mountain a mile away were almost totally destroyed. Perhaps a quarter of those below the mountain were nipped off, which will serve as a thinning. Some of the cherries and peaches on the more exposed portions of the trees were blackened and spoiled, but the loss will be small even with these tender fruits, while the pears and apples have wholly escaped. I am sorry, however, to report that winter apples are not blooming to any extent, especially the Baldwins and Spys."

W. W. Hilborn, Leamington, experimenter with peaches and strawberries at the Leamington

Fruit Growers' Station, writes: "In this immediate vicinity very little injury has been done. Strawberry blossoms—About one in ten or fifteen of those fully open are killed. Currants are injured to some extent, also tomato plants. I think outside of this the fruit is all O. K. The peach trees are very full of young fruit, and appear at this date (May 20) to be in good shape. Farther from the lake and on lower land much more harm was done."

G. C. Caston, Craighurst, apple experimenter at the Craighurst Station: "It is impossible to estimate the extent of damage to apples till we see what amount of fruit drops off. The new shoots on grape vines are all frozen off. Strawberries badly damaged."

Alex. McD. Allan, Goderich: "The late frosts did a good deal of damage here among the fruits, especially grapes and cherries. The first picking of strawberries has been cut off, also most of the grapes, even along the lake shore district. Unless we have a stronger repetition we will have a fair crop of plums, pears, apples, especially late kinds. Spys are all safe. Currants, raspberries and gooseberries are also safe. It will be fully ten days yet before a decided report can be given, as doubtless much of the fruit that has set and held through the frost may yet succumb."

W. C. Huff, Mountain View, Prince Edward Co.: "The injury to apples, pears and plums is apparently very light; the grapes suffered more, the leaves being partially taken off. Garden stuff was nipped quite badly; grain is all right." A later communication, written May 23, says: "We had a very severe frost last night, which rendered the grapes a total loss."

E. F. Augustine, Aulhram, Lambton Co.: "The frost has done many hundreds of dollars' worth of damage in this locality. Apples, pears, plums and cherries are entirely destroyed. Strawberries may yet make half a crop. Blackberry buds are all black, but raspberries are not so badly damaged and will probably make two-thirds of a crop. On high land, field crops have not suffered, but on low lands wheat is much injured, and some spring crops are cut to the ground."

Others report from 25 to 50 per cent. damage to the apple and pear crop.

## POULTRY.

### Management of Sitters and Young Chicks.

BY MRS. IDA E. TILSON.

Before we cook or sell a chicken we must hatch it, and the best way to break up a broody hen is to let her raise a family. As a rule, the hen that desires to sit is fat; broken up immediately, she only takes about three days, but is left in a condition unfit for laying and soon returns to her sitting. The proper plan is to reduce her condition, which may be done by letting her sit a week or ten days, sparingly fed, though having plenty of water, then put in "jail"; she may require a little longer, say five days, to be dissuaded, but stays broken up. I am often asked whether it is not a wise plan to put a rooster in the "jail" with my broody fowls to divert their "thoughts." Yes, where flocks are yarded, or there is but one rooster in all. Temporarily removing any rooster from those allowed to run together makes the other cock or cocks disappointed and resentful at his return, hence he must be prepared for a fight. I do not like fights, so keep my roosters together and acquainted; two for a flock of 50 hens being sufficient, under farm conditions. A Waterville poultrywoman asked how I prevented fighting of cocks. I told her it was done by punishment with a switch, and she replied there were no trees handy to her, though she asked the question because she had found a buggy-whip so effectual; they stop at sight of that. Hens which hatch a brood during the spring or summer, getting that variety into their lives and securing a rest from egg-production, make the most vigorous fowls and the best winter layers.

An Eastern man has offered a \$1,000 reward for any person who can tell him a sure way to prophesy the sex of chick from style of egg set. No one has claimed the reward. A ministerial friend told me about a hen of his which habitually laid pointed eggs. He put her on a clutch of her own laying, and she hatched and reared eleven black roosters. There is something in the belief that such shaped eggs produce cockerels, but I have selected whole settings of long eggs, wrinkled on the small end too, and did get some pullets, while from round, smooth eggs come likewise some cockerels. The latter are more numerous in early hatches, while pullets exceed later; but these are secrets we cannot find out yet. The sexes are pretty evenly divided, season out and in. Other things being equal, the greater the number of eggs a hen lays the less vitality and substance she gives each. For vigor, eggs to set are preferred from hens in freedom, and those on our large western farms and ranges are specially promising. The strong egg is more than nest material, heredity than environment. At Amboy I heard of a woman who one year raised 3,000 chicks by hens. Shades of the incubator! There were many flocks of over 200 there, and one of 500. The hatching of chicks was not troubling them so much as the absence of winter eggs. To secure the latter, not even a brilliant spurt avails; only every-day attention, 365 days in a year, an hour a day for every 50 hens, according to Isaac Felch, which my own experience verifies. I remember "Mr. Judson, of Cackleville," who writes for *Farm Poultry*, declares