The Creamery Overrun.

The following excerpts are taken from a paper prepared by Prof. E. H. Farrington, of Wisconsin, for the convention of the National Creamery Buttermakers' Association at Chicago :

Butter is a mechanical mixture of butter-fat, water, salt and curd, and from the nature of the processes of washing, salting and working of butter, it is inevitable that there will be different amounts of water in different churnings of butter.

The average composition of butter is about the following : Butter-fat, 83.5 ; water, 12.0 ; curd, 1.0 ; salt, 3.5 per cent.

The overrun represents the difference between the weight of butter-fat in a given quantity of milk or cream, and the pounds of butter made from this milk or cream. For example, if 232 lbs. of butter are made from 5,000 lbs. of milk, testing 4 per cent. fat, the overrun may be found by first multiplying the milk by its test, which gives 5,000 by .04, or 200 lbs. butter-fat ; then by subtracting this number of pounds from the 232 lbs. of butter, the difference is 32 lbs., which is 16 per cent. of the fat in the milk (32 by 100, divided by 200, gives 16.0). The overrun in this case is 16 per cent.

Normal losses of butter-fat in manufacturing occur in the skim milk, the buttermilk and the waste of milk, cream or butter that sticks to the tinware, churn and other utensils used in the manufacturing processes. These all have a tendency to reduce the overrun, and when any of them are cut out entirely, as in the case with the skim-milk fat when cream only is received at a factory, the overrun will be increased. It may also be increased by incorporating excessive amounts of water in the butter, by short weights of the milk or cream, and by under-reading tests of the milk or cream bought.

Exactly the same overrun cannot be expected in each churning, and it may normally vary between 12 and 20 per cent.

Abnormal overruns of over 20 per cent. or under 12 per cent., are caused by some error or carelessness, and may be due to some one or all of the following causes :

1. Inaccurate weighing.
2. Inaccurate sampling.
3. Inaccurate reading of fat tests.
4. Excessive losses in skim milk.
5. Excessive losses in buttermilk.
6. Losses of fat in milk, cream or butter wasted.
7. Low fat content of butter, or excessive water content.

The Multitudinous Microbes.

The importance of care in washing milk utensils to rid them of the ubiquitous microbe is indicated by the number computed in an actual experiment, according to an exchange. In the first washing were found 7,389,000 bacteria ; in the second washing, 157,000, and in the third washing, 58,000. We are not told how many washings it would take to make the pails really clean. Presumably steaming or scalding would be the only way to disinfect them, and then one might expect a few germs to be left around the corners.

Results for three months of the testing of individual cows in the Cowansville, Que., cow-testing associations, organized by the Dairy Branch of the Department of Agriculture, show great differences in the average yield from the various herds, illustrating the possibilities of general increase ; for instance, in March the variation is from 10.8 lbs. of butter-fat per cow, to as high as 29.4 lbs., the average of 18 animals in one herd.

Cow-testing Associations.

Eleven cow-testing associations have been organized in Ontario and Quebec by the Dairy Division of the Department of Agriculture. About three thousand cows are now regularly under test, their owners having agreed to weigh the milk six times a month, the Department doing the testing for a year. It is expected in this way that several unprofitable cows will be detected and disposed of, while an incentive will be given to keep better stock and feed them better.

The table below gives the result of the first thirty-day period of testing at St. Armand, Que., showing the average yield of each herd, and the contrast between the highest and lowest yield of butter-fat from the best and poorest cow in each herd :

ST. ARMAND WEST, QUE., ASSOCIATION, 30 DAYS, ENDING 22nd MARCH, 1906.

Herd No.	No. of cows.	Average per cow. Milk lb.	Test.	Fat lb.	Milk lb.	Highest amount of fat per cow. Test.	Fat lb.	Lowest amount of fat per cow. Milk lb.	Test.	Fat lb.
1	15	416	4.6	19.4	635	4.5	28.5	300	3.9	11.7
2	14	480	3.8	18.1	680	3.9	26.5	340	3.3	11.2
3	22	478	3.7	17.6	745	4.0	29.8	190	4.2	7.9
4	9	264	4.5	12.1	480	4.0	19.2	170	5.1	8.6
5	10	585	4.0	23.4	790	3.7	29.2	290	5.7	16.5
6	12	401	4.0	16.1	650	3.6	23.4	210	5.2	10.9
7	17	540	4.0	21.7	780	4.0	31.2	210	4.6	9.6
8	11	565	4.2	23.9	780	4.7	36.6	240	5.0	12.0
9	18	545	3.8	19.9	820	3.4	27.8	185	4.5	8.3
Average.	128	482	3.9	19.2						

POULTRY.

Tardy Incubation.

Editor " The Farmer's Advocate " :

Here is a little article which might be of some interest to your readers. On March 4th, 1906, I set two hens, each having an equal number of eggs. In due time only one came off with good results ; the other gave no signs of increase. I thought it no use to let her sit longer, but for fun I let her remain, and on March 30th the first chick made his appearance. On the 31st five more came out, but were so weak that four of them died. The two that remain are smart but very small. A cold snap in the fore part of March must have chilled the eggs. J. W. AUSTIN.

New Westminster, B. C.

Expensive Carelessness.

At different farms this winter I have noticed dead hens thrown upon the roof of the henhouse, and several in other places about the premises. There is nothing more certain than that contagious diseases fasten themselves upon the buildings and grounds where poultry is kept, and are always ready to fasten themselves upon the fowls whenever they are weakened by extremes of weather, or any other cause. Nothing spreads the contagion so much as the carcasses of birds that have died from a contagious disease.

There was a time when the most troublesome form of roup, as we have it now, was not known.

A Young Poultryman.

It usually comes on as a result of a cold, and for this reason many think it is only a bad cold, and think nothing about its being spread in the flock. It is a fact that a hen is not likely to get the roup unless she catches a cold, but it is equally true that she will not get the roup when she has a cold unless she is in some way exposed to the contagion. Roup is a specific germ disease, very similar to diphtheria in persons. There is no question about the truth of this, for microscopic examinations have revealed the germ. It has been propagated in cultures, and birds inoculated from the culture have promptly developed roup. Fowls that die from roup or any other disease should be removed at once and burned, and it is much wiser to remove them when they first show unmistakably signs of disease, and kill them and burn them.

W. I. THOMAS.

If you have a piece of alfalfa near the barn, observe how the hens range over it from now on, picking the green leaves as they unfold. Alfalfa is a great early green feed for poultry. Chickens are fond of it, and it helps the egg crop.

Has there been a cow-testing association formed yet in your vicinity ? A line to C. F. Whitley, care of the Dairy Branch, Department of Agriculture, Ottawa, may be the means of starting a whole community on the path of progress.

Hatching Duck Eggs.

Editor " The Farmer's Advocate " :

A great many people do not like to begin hatching out chicks early in the spring, because, as the weather is often unsettled, the chicks cannot be allowed their liberty, and they do not do so well. The question of weather is not so important to little ducklings, as they can be housed from the time that they are hatched until they are marketed. They do not require any exercise, and but very little artificial heat. They will nestle down together and keep each other very warm. They do not require light in their sleeping quarters, and as long as they can see their food when they run out to feed, it is all that they require. If only a few are to be hatched, the eggs can be placed under hens, and the ducklings can be brought into the kitchen and kept in a box with plenty of clean hay in it and an old sack thrown over the top. At feeding time they should be lifted out and fed in some large, shallow box with an old sack in the bottom of it. If a large number are wanted, it is best to place the eggs in an incubator. They hatch very well in incubators, but they require more moisture than hens' eggs, and in ordinary incubators will hatch much better if the eggs are dipped in tepid water for the five days before hatching. The eggs should be put under water for only one second. A duck's egg should not be discarded because a weak germ is discovered, for very often these make the strongest ducklings after all. If a germ should die, it will very soon be noticed, as the eggs become mottled and discolored. When the little ducklings hatch they should not be fed for thirty-six hours at least. They should be given all the broken eggshells that can be spared, as this will help the gizzard to work and will make the digestion strong. The first meal should consist of bread toasted nearly black, and soaked in tepid water. Fine sand and shell grit should be sprinkled over the toast and water. Fine sand and shell grit are necessary to ducklings, and they will not grow well without them. Rolled oats, given dry, may now be fed four or five times a day. A deep water dish should be supplied, and a cup should be turned upside down in it to prevent the ducklings from swimming in the dish. The water should be deep enough to cover the nostrils. The little ducklings can eat almost anything that is minced up small, and all food and drink should be given warm. They must have meat and ground oats of some sort. Dog biscuit slightly moistened makes splendid food for ducklings, and if they are intended for stock, they may have all the green stuff they can eat, but if intended for table it must not be given, as it makes the flesh yellow and flabby. The ducklings must not be allowed all the water that they can drink, as many will drink too much. If they are intended for table, they must soon be limited to two drinks a day.

British Columbia. OCTAVIA ALLEN.

GARDEN & ORCHARD.

Dust Spraying Inefficient.

Experiments extending over three seasons have been conducted by the Department of Horticulture at the Illinois Experiment Station, to test the efficiency of dust spraying with dry Bordeaux mixture and arsenites, as compared with ordinary liquid applications, led to the following conclusions :

With regard to the effects upon foliage, the results were identical in all orchards and in all seasons. Trees sprayed with liquid Bordeaux and Paris green retained their foliage in healthy working condition throughout the season. Dust-sprayed and check trees may be placed together, because the behavior of foliage was the same in both. Leaves began falling in July, and in early September these trees were practically denuded. This loss of foliage by dust-sprayed and check trees was due to apple scab, against which disease the dust spray was entirely ineffective. The effects of this loss of foliage are very serious. The assimilatory processes of trees are active in proportion to the working leaf surfaces ; as leaves fall, these processes diminish until brought to a stop by the entire loss of foliage, long before the work of the season should normally end. The fruit is starved, does not approach normal size, and buds for the next year cannot be properly developed.

Differences in fruit were as marked as were differences in foliage. Liquid-sprayed trees gave smooth fruit of good size. Dust-sprayed and check trees gave small, ill-formed fruit, badly marked by scab, and of very little value even as evaporator stock.

Dust spray is 52 per cent. cheaper than liquid spray, and it is easier to transport about the orchard. It has no other advantages.

The results of the experiments are sufficiently decisive to warrant the conclusion that dust spray is absolutely ineffective as a preventive of injury from prevailing orchard fungi, and that it is considerably less efficient