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A St. Paul man has introduced a new method of refrigerating perishable products in transit, which, it is claimed, will effect a great saving in ice. A carload of 22,000 pounds of butter was recently brought through five days of record hot weather on an expenditure of only 3600 pounds of ice, preserving inside the car a temperature of 38 degrees, while outside on the roof the thermometer registered 110 to 115.

The car is built with double walls, divided into circulating flues, which make the car available for either refrigeration or heating, according to season, yet economizing ice, it is claimed, 40 to 50 per cent. over present methods. Further, the space economy of the refrigerating features is such that there can be packed into 28 cars what now requires thirty-eight, and the butter is kept better cooled and ventilated and perfectly dry.

#### Official Testing of Pure Breed Cows

In 1906 the Dominion Minister of Agriculture, Hon. Sydney Fisher, caused to be instituted, under the supervision of the Live-stock Branch of his Department, a system of yearly testing of milk and butter-fat production of registered cows in pure-bred herds, with a view to the improvement of the average productive capacity of the dairy cows of the country, through the use of sires bred from dams qualifying for Records of Performance provided for under this system, and by the weeding out of inferior cows. The dairy breed societies were invited, and several have agreed to publish these records for their respective breeds in an appendix to their herdbooks, accepting the rules and conditions prescribed, and fixing a standard for each of their respective breeds, the Department assuming the expense of the supervising inspectors appointed by the Minister to make unannounced quarterly visits of two days' duration to the herds, verifying the private records kept by weighing and taking samples for testing by the Babcock method of the milk of the cows entered for the test, taking also a record of two previous days' milk for comparison.

The classification of cows is in four sections, namely, for two cows two to three, three to four, four to five, and five years old or over. Applications for official supervision of the test must be made to the secretary of the Canadian society for the breed to which animals belong. The owner of a cow entered in the test is required to weigh each milking and keep a correct record of the same on forms furnished for the purpose. At the end of each month the owner is required to report, on forms furnished for the purpose, a record of the weights of each milking, with the total yield of milk from each cow for the month, and at the end of the year a compiled report of the year's milk record, taken from the monthly reports sworn to before a notary public or justice of the peace. Each breed society fixes its own minimum standard of milk and butter-fat production required to render animals of the various age classifications eligible to have their names and records published in the Record of Performance. Some societies have adopted higher standards than others, although this in itself does not signify anything beyond the ambition of the society. In our opinion, a medium standard is desirable, so as to admit all cows of genuine merit. Those which make exceptionally good records in the official test have these standing to their credit.

In case of Ayrshires, the minimum year's production to qualify for the record is, for two-year-old heifers, 5,500 pounds of milk, and of butter-fat 198 pounds. And for each day the animal is over two years old at the beginning of her year's test, the amount of milk she will be required to produce in one year is determined by adding 2.75 pounds per day to the 5,500 pounds required for an even two-year-old; while the amount of butter-fat increases at the rate of one-tenth pound for each day over two years. This ratio is applicable until the animal is five years old, when the required amount of milk will be 8,500 pounds, and of butter-fat 306 pounds, which are the minimum amounts of milk and butter-fat required of all Ayrshire cows five years old or over. For Jerseys the milk standard is the same as for Ayrshires, but the requirements as to butter-fat production are 10 per cent. higher. The standard adopted by the Holstein-Friesian breeders calls for a minimum of 2,000 pounds more milk than demanded by the Ayrshire and Jersey breeders, and a little more fat than the Jersey minimum requires.

The Guernsey standard specifies in each class 500 pounds less milk than the Ayrshire standard, but from 2 to 14 pounds more butter-fat. The French-Canadian breeders will record the performance of a two-year-old heifer if she yields

4,400 pounds of milk and 198 pounds of butter-fat, while from a mature cow they demand 6,800 pounds of milk and 306 pounds of fat, from which it will be noticed that their fat standard is the same as for Ayrshires, although their milk minimum is considerably lower.

After a cow has finished her milking period and calved again, the owner of the cow makes an affidavit that the records of milk sent by him to the office are correct. The butter-fat is computed from the inspector's reports and tests. The fat reading of each report covers a period extending half-way back to the previous report and half-way on to the next report. Report of the cow's production and date she dropped her calf, number of days in milk, average percentage of fat, etc., signed by the Live-stock Commissioner, is sent in duplicate to the secretary of the association; one of these reports is to go to the owner of the cow, and belongs to the cow, the same as a certificate of registration; the other is for the secretary's use. That completes the work of the Department with that cow for that year. But she may be tested each consecutive year if the owner wishes; in fact, consecutive testing is advised, because a cow that can qualify and make a fair record for more than one year should be considered a better cow than one which does only one year's work. The inspectors are now making more frequent visits than the quarterly ones originally provided for, and expect, in the near future, to make one a month. In case "stuffing" of milk records is suspected, more frequent visits will be made, and if the inspectors are satisfied the weights given by the owner are not correct, no more testing will be done for that party; and what that would mean to a breeder is readily understood.

In order to insure that the records published shall be made by regular-breeding cows in an ordinary lactation period, there is a rule, as follows:

"In the four-year-old class and the mature class no cow will be accepted for entry if the beginning of her previous lactation period was more than fifteen months before the commencement of the test. Every cow under test must drop a calf within fifteen months after the beginning of her testing period in order to qualify for registration of performance. No milk from a second freshening within 365 days will be considered in a test."

About 25 cows that would have qualified had they dropped their calves in time, are now out of it for two years. Some breeders, desirous of making big records, went too near the danger point, and missed all.

Mr. Dan Drummond, an experienced dairyman, of Quebec, was the first inspector of this work appointed, but as applications increased, and the desirability of making more frequent inspection of cows was recognized, assistance was found necessary, and Mr. G. W. Clemons, of St. George, Ont., was appointed; while the probability is that an additional inspector will be required in the near future to keep up with the work.

Below are the number of applications to July 1st, 1908. It will be noticed that the list embraces representatives of but three breeds—Ayrshires, Holsteins, and one French-Canadian. It is to be hoped that owners of the other breeds will take hold of the work in future with equal interest. We might add that the Holstein breeders have, in addition, a well-established Record of Merit, based on official weekly tests, in which a goodly number of their cows are entered. This Record of Merit is entirely independent of the Dominion Department of Agriculture.

Applications. . . . .	345
Qualified. . . . .	41
Failed in breeding (qualified otherwise). . .	25
Still running. . . . .	142
Withdrawn or failed. . . . .	137

#### Reject the First Few Streams of Milk

Some recent English investigations, carried out on behalf of some of the County and Borough Councils in Yorkshire, demonstrated that the first milk drawn from each cow contained an enormously greater number of germs than either the mid-milk or the strippings. The first or fore milk represented the first 25 cubic centimeters drawn from the teat, the mid-milk being taken when the milking was half accomplished.

The numbers were quite variable, but the results largely confirmed those of other investigators, one of whom found 97,000 bacteria in the first milk, as compared with about 9,000 in the mid-milk, and 500 in the strippings. It seems that the bacteria clustered in colonies about the

end of the teat are largely washed away by the first few streams of milk drawn from the quarter. The practical lesson is, of course, to reject the first two or three streams of milk from each teat, not even allowing it to come in contact with the inside of the pail. As the fore-milk is very thin and watery, practically no butter-fat is lost, while the bacterial content of the mess of milk will be very much reduced, and its wholesomeness and keeping qualities accordingly improved.

## POULTRY

Any experienced, close observing poultry raiser knows, at a glance, the laying hen; the small feminine neck and head count again, the bright, alert eye tells a tale, the drooping tail tells another tale, and when she picks her feet up and plumps them down, we have another pointer.

\* \* \*

Turkeys often show swollen heads and sore eyes this time of the year. This may be caused by running through poisonous weeds, but more often than not is severe cold taken on by roosting in rain and cold. Remedies for acute catarrh are suggested in these cases, and shutting up at night or giving roosts under shelter.

\* \* \*

It is doubtful if the 200-egg per year hen will ever be excelled to any great extent. There is a limit to increased production, and the 200-egg point seems very near it to us. But the ordinary farmer's flock isn't in much danger yet for a while of crowding the limit very seriously. Hardly any of them but what can be improved to a point where the 200 egg mark would fit where the 150 mark, or even less, fits now.

\* \* \*

A close observance and constancy with the flock enables us to know, by sight, what hens lay every day and those that lay every other day, or do not lay at all, but we must never lose sight of the fact that the cockerels are half the flock in breeding value. Many of the same rules that apply to the race horse, the cow or the hen also apply to cockerels. The small neck and head, the alert eye and activity are all pointers in the right direction.

#### Eggs and their Food Value

By Prof. J. F. SNELL, Macdonald College.

Someone has poetically described eggs as—

"Treasure houses wherein lie,  
Locked by angels' alchemy  
Milk and hair and blood and bone."

The lines were no doubt designed to express tersely the relation of the egg to the chick hatched from it, for enclosed within the shell is not merely the germ, with its marvellous power of development into a new individual of its species, but also a store of food, suited to the requirements of infant life, and sufficient to provide the chick with the "hair and blood and bone" with which it emerges, fully armed, into the outer world. Indeed, to the great majority of feathered infants (the pigeon being one well-known exception) the contents of this storehouse is the only milk that nature provides. The inference is an obvious one, that, containing as they do, ingredients naturally adapted to the earliest stages of animal life, eggs should constitute an appropriate article of food for children, and we shall see that chemistry lends its support to this inference, though it likewise confirms the observation of experience, that bad cooking (which, in the case of eggs, is usually overcooking) may materially alter the condition of the food, and render it so difficult of digestion as to be utterly unsuited for the use of the young.

Like all succulent foods, eggs contain a large proportion of water. The quantity amounts to about seventy-four per cent. of the total weight of the contents of the shell, not including the shell itself, which is of course, much drier. Thus, water constitutes very nearly three-fourths of the contents of the egg, the proportion of water being almost exactly the same as in the flesh of a broiler, but considerably greater than that in the flesh of a full-grown hen. The water of the egg is unequally distributed between the white and the yolk, the former being seven-eighths (accurately, 85.7 per cent.), the latter only about one-half water (50.9 per cent.). From this standpoint, then, the yolk of the egg is a much richer food than the white—just as solid meat is richer food than soup. To get the same weight of solid food from white of egg as from one pound of yolks, we should have to take one and three-quarters pounds of white. We shall see later that there is another sense in which the yolk of the egg is to be regarded as a richer food than the white. Our present point is merely that, weight for weight, it is a more concentrated, a less watery, food than the white.

But although the yolk is the more concentrated portion of the egg, it is the smaller of the two in size and weight. I wonder how many egg-eaters have ever stopped to compare the relative quantities of the two divisions of the egg. Doubtless most of us know