

ness in milk in creameries, and the identification of *Bacillus lactis viscosus* as the cause, show that the ropiness brought about by that organism, although appearing only in the surface layer of milk, may become of considerable commercial importance.

Last summer the appearance of ropy milk was brought to notice by a milk dealer, who, having suffered severely in loss of custom by its occurrence, applied to the Agriculture Station for aid. He was instructed to dampen the udders of the cows with dilute carbolic acid before each milking. This measure, which is of value in preventing filth on the udder from falling into the milk, was carried out faithfully without benefit. A careful study was made of the conditions under which the outbreak occurred.

All of the milk handled by this dealer was supplied by one dairy consisting of twelve cows. The surplus of milk over that disposed of on the route was used for butter making, the deep-setting system of creaming being used. The cream on the surface of the cans of milk which stood in water at a temperature of from 45 degrees to 50 degrees F. (7 degrees to 10 degrees C.) became viscid in from twenty-four to forty-eight hours after setting, so that it would adhere to a table fork, stringing out in a ropy mass. The viscosity was more marked in the surface layer of the milk, and hence in the cream. It is for this reason that the trouble is incorrectly regarded as a fault peculiar to cream. No complaint was heard from those customers who consumed the milk within a few hours. Some of them, however, kept the milk until the following morning, when the cream would be ropy.

An examination of the ropy cream revealed the presence of *Bacillus lactis viscosus*. To find out through what channels the milk became infected, it was proposed to collect samples of the milk at each step in the processes to which it was subjected between the cows' udders and the deep-setting cans where the ropiness becomes manifest.

In taking samples of milk from each cow, the udders and teats were moistened with a weak solution of carbolic acid, this being the only safeguard taken to prevent the access of dust. Glass milk bottles were scalded and kept sealed with paper covers, except at the moment the samples were drawn. The wide mouth of the bottle offered considerable opportunity for the entrance of dust particles which might convey the bacteria had the particular species in question been adhering to the udder. Other samples were drawn into test tubes, the mouths of which presented a smaller area for the reception of dust.

Cultures were made from the milk of each one of the cows on two different days, the bacteria present in the milk of each cow being thus obtained in pure culture. From the first twelve samples there were obtained five apparently different species, none of which, when grown in sterile milk, brought about the viscid condition. None of the species at all resembled the organism sought. During the period that the cultures were being made from the milk, the ropy milk was constantly present in the creamery.

In addition to examining the milk samples collected, a bacteriologic examination was also made of those substances which might harbor obnoxious organisms such as stable dust, particularly that dislodged from the udder, unclean utensils and faeces. Sterile milk was inoculated with bits of rubbish from the floor of the stable, dust from the beams overhead, cow hair, water from the drinking trough, and sawdust from the icehouse. None of the samples of sterile milk thus artificially contaminated became ropy, although all underwent some sort of fermentation. Cultures were made from the faeces of a cow, but the bacteria found threw no light upon the problem.

An examination of all of the other probable sources from which the bacteria might have gained entrance to the milk having revealed nothing, attention was turned to the utensils with which the milk came in contact. It would be a very simple matter for a milk vessel, which had once contained ropy milk and which had not afterwards been properly cleansed, to again infect normal milk placed in it.

Upon one occasion the milk aerator in use at the farm barn was found in an unclean condition, it having been carelessly rinsed when last used. Cultures were made directly from the milk remaining in the apparatus. Several small quantities of sterile milk were exposed to infection in the pails used for milking, and also by pouring through the mesh of the strainer pail. Inoculations were made directly to culture media from the accumulated mass of filth on the border of the brass strainer. Such an accumulation, although innocent in appearance, is nevertheless teeming with bacteria which infect the milk which passes through the strainer. None of the cultures made from the accumulated filth revealed the presence of the bacteria causing ropiness, nor did any of the milk samples become viscid. It was noted, however, that the bacteria found in the filth of the aerator were identical with those found growing in the milk which had been poured over it; also, that those in cultures from the filthy

strainer were the same as those found in the milk poured through it. These facts are of interest as illustrating how directly filth may influence the keeping qualities of milk by introducing bacteria. It should also be noted that the filth itself cannot cause ropiness in milk, unless there are present in it the bacteria which possess that power.

It is important now to note the results obtained from a similar treatment of the milk in the creamery. The evening's milk was brought to the creamery and placed for the night in deep-setting cans surrounded by ice-water. That of the morning was aerated and brought to the creamery, where it was again strained before delivering. A brass-wire strainer was used constantly because it was of such size as to fit over the top of the cans, forming a convenient device for holding a cloth strainer in place. For this reason all of the milk passed through the one strainer and always into deep-setting cans. The milk strained in the evening remained in the cans over night. The meshes of the strainer were obstructed by an accumulation of filth, the result of a lack of thorough cleaning. They had become obstructed to such an extent that the reservoir would become half full of milk before the pressure of the accumulated fluid was sufficient to force its way through the meshes.

Three different quantities of sterile milk were successively exposed to contamination on the surface of the strainer. All three samples and two of four samples from the deep-setting cans became viscid. The viscid condition was caused by *Bacillus lactis viscosus*.

Greater care in scalding the utensils brought the trouble to an end. All small utensils were immersed in boiling water for three minutes, and the larger cans were filled to the brim with scalding water, which was allowed to remain for the same length of time.

The importance of thorough scalding of vessels which have once contained ropy milk is urged upon the consumer as well as the dealer. Bacteria may readily be transferred from running water to milk by the agency of mud, which, drying upon the udder, may be dislodged during milking. Milk utensils which have been used for containing water should be scalded before using again for milk. The apparent purity of water used about a creamery gives no assurance that it is free from bacteria.

Chatauqua Co., N. Y.

T. A. TEFFT.

POULTRY

B. C. Egg-Laying Contest.

September the twentieth marked the end of the eleventh month of the international egg-laying contest, being held under the joint auspices of the British Columbia Poultry Association, Vancouver Board and the Provincial Government. With just one month to go the interest was keener than ever. In class one for non-sitters the first thirteen pens are White Leghorns, the leading pen No. 2 having laid 920 eggs, nearly one hundred more than its closest rival, No. 9 with 838 eggs. In class two, including the general-purpose breeds, pen 33, Rhode Island Reds, is leading with 782 eggs, with pen 38 White Wyandottes second with 771 eggs. Third stands pen 31 Rhode Island Reds with 695 eggs, and fourth and fifth two pens of Barred Rocks, 26 and 37, with 687 eggs and 670 eggs respectively to their credit. In this class, pen 40 Silver Laced Wyandottes at the commencement held first place for four months, but is now at the bottom of the list with 402 eggs all told. The race has been a good one, and another contest is contemplated.

Fattens His Own Poultry.

Editor "The Farmer's Advocate":

For about seven years we have been fattening our own surplus cockerels and scrub pullets. Having some seventy-five or one hundred cockerels and pullets to market, and being only offered fifty cents a pair, when I could put them up and feed them some extra, and sell them for one dollar and a half a pair, I thought it was wise to try fattening, as the local market takes all I have to sell. I have never shipped away, so I know nothing about that part of the business.

We use crates six and a half feet long, eighteen in. wide and twenty in. deep (inside measurement), covered with slats two in. apart. Bottom slats are lengthways of crate. Front ones on end for the birds to feed through. Slats are hinged on top in three parts, for putting in and removing birds. Crates are divided into three apartments; each part will hold four or five birds. A V-shaped trough is fastened in front of crate for birds to feed from. We take chickens weighing from 2½ to 4 lbs., first dusting with insect powder, then putting 12 to 15 in a crate, leaving them in for three weeks. Birds are fed a mash consisting principally of ground oats with the coarse hulls sifted out. Sometimes we use cornmeal, about one part to two of oats, but as

we find this gives the birds a yellow flesh, and as we like a white-fleshed bird, we use mostly ground oats. This is mixed with skim milk or butter-milk. If sour or thick all the better. This mash will almost find its own level in a pan. We do not feed them for the first day. After that we feed three times a day for the first week nearly all they will eat. Then the last two weeks we give them all they will eat up clean. They should get water to drink every day; also grit about once a week. We never give beef scrap, as we find the milk does just as well. We have tried Plymouth Rocks and Orpingtons, but find Wyandottes fatten most easily, and are plumper. We kill by dislocating the neck and plucking immediately.

We can get from 5 to 7 cents a pound more for fattened poultry than unfattened. After one lot of poultry is taken out the crates should be sprayed with some disinfectant or louse killer. Pictou Co., N. S. C. McCALLUM.

APIARY.

"Stung."

If "The Farmer's Advocate" or any other agricultural journal took for granted and published all the remarkable stories bearing on agriculture which are to be found in the newspapers, the result would be an extraordinary weekly assortment of buncombe. Yet there are thousands of farmers and country folk—to say nothing about the city people—who do not appreciate the difference in editing between the newspapers and the agricultural publications. Consequently they believe one about as readily as the other, and delight in the curious and marvellous agricultural items which they read, often crediting the newspaper editor for enterprise when they should criticize him for gullibility, carelessness or fraud. A case in point seems to be the following extract from a Toronto paper, which received it from a London correspondent by special cable.

"The stingless bee is the next product of a man's ingenuity. Mr. Burrows, an apiarist of the Town of Loughton, in Essex, after two years of experiments has obtained a species of bee which can be handled by a child in perfect safety. He mated the Cyprian drones and the Italian queens, the result being the production of harmless insects which, however, are splendid workers. It is claimed that they are less liable to disease than the ordinary honey-gatherer.

"It appears that the new product has a sting, but it is useless as a weapon of offence. Yet they die when they lose it."

With reference to this important despatch we append a racy comment received by "The Farmer's Advocate" from Morley Pettit, Provincial Apiarist for Ontario.

"Of all the newspaper stories made out of whole cloth, this is the limit. As you know, no radical change in the life and physiology of any organism has been materially accomplished with only two years experimenting and as all beekeepers know, if you cross Cyprian drones with Italian queens, you will get a result that is far from stingless. My earliest recollections of life in the apiary are of a particular corner of the apiary where bees of just this parentage had their hive. I was always careful to keep as far from that part of the apiary as possible, and whenever it was necessary to open those Cyprian crosses I always managed to have the smoker going particularly well, as the Cyprian bees and their crosses are the crossiest bees that any beekeeper ever undertook to handle. The Cyprians are particularly good workers, but from this characteristic of being hot-tempered and unreasonable, and almost impossible of control by smoke, they are not kept to any extent for commercial purposes."

GARDEN & ORCHARD.

United States Standard Apple Barrels.

A law which comes into force on July 1, 1913, will establish throughout the United States a standard barrel and standard grades for apples when packed in barrels. The standard barrel for apples is to be of the following dimensions:—Length of stave, 28½ inches; diameter of head, 17½ inches; distance between heads, 26 inches; circumference of bulge, 64 inches outside measurement; capacity, 7,056 cubic inches, as nearly as possible.

The apples are to be graded according to their diameters, and the barrel may be marked "Standard grade minimum size 2½ inches," or 2½ inches, or 2 inches, as the case may be. Each barrel is to contain only one variety of apple, the name of which must appear on the barrel, together with the place of production and the name of the packer. The law imposes a penalty of one dollar and costs for each barrel sold or offered for sale which is misbranded.—(Board of Trade Journal.)