very fond of it also, and will "fill up" better on roughage with the pulp mixed in than anything I have fed. The cattle were fed pulp three times daily on their straw, after having chaff, turnips and meal, eating all up clean. For pigs, I mixed the pulp and ground grains in a large feed box, and got as good gains as when feeding mangolds in the same way. They eat everything up clean, and their tails begin to curl, which, as Theodore Louis says, is "the thermometer of the hog." When his tail curls he is thrifty and hearty. Pigs were fed three times daily also. Cattle of all kinds eat it with more relish and greed than ensilage, showing their appetite for the pulp.

4th.—The pulp, quantity for quantity, is, in my estimation, fully equal in feeding value to ensilage, mangolds or turnips, and judging from the way stock eat and relish it, they endorse my opinion.

5th.—The only precaution exercised in our feeding of the pulp was at the commencement, giving a light ration until the stock had acquired an appetite for the feed, and later guiding the quantity fed by the state of the manure.

6th.—The value of pulp must be credited, as with other roots, to its succulence, and in helping to assimilate in digestion the dry fodders. In point of succulence it far outstrips any roots, but a ton of pulp would be only about one-half the bulk of a ton of pulped mangolds or turnips. One ton of pulp would feed a given number of stock as long as twenty bushels of turnips or mangolds, with, I am sure, fully as good results either for fattening or milk. Valuing the turnips at the average price of ten cents per bushel would make the pulp value $2 per ton.

But here we have a remarkable contradiction to the old adage, "You cannot eat your cake and have it." One can grow a field of beets, sell them, and have them for feed besides, the company returning the pulp to the grower at the small cost of fifty cents per ton for freight. I have grown beets and fed the pulp once. I like it, the stock like it, and I shall grow again.

Oxford Co., Ont. ARTHUR L. CURRAH.

DAIRY.

Questions for Dairymen.

1. What is your favorite breed or grade of dairy cows? Give reasons.

2. Do you make the milk into butter on the farm, send to a cheese, butter or condensing-milk factory, sell whole milk or cream?

3. If possible, send us figures telling what cash returns per cow you received last year from the milk of your herd?

4. Can you show the profit derived per cow during the year, by deducting cost of feeding and care?

5. Do you keep a record of what your cows produce in pounds of milk, and do you test it for butter-fat? What is your system, and what are its advantages?

6. What is the best plan to get a profitable dairy cow?

[Concise answers to the above questions can be put in a few hundred words, and we request our dairy readers to send their replies in by the earliest mail convenient. In case you are not in a position to fully answer some of the questions, omit these and deal with the others.]

Carleton County Dairying.

(Ottawa correspondence.)

A second series of dairy meetings, under the auspices of the Ottawa Cheese and Butter Board, has just been completed in Carleton County. Meetings were held at five points, and at each place there were large audiences of farmers assembled. The speakers were N. G. Somerville, Superintendent of Cool-curing Rooms, Brockville, Ont.; Dairy Instructor S. S. Cheethem, of Gananoque, and C. F. Whitley, of the Department of Agriculture, Ottawa. These dairy meetings have done much to raise the standard of the dairy products of Carleton County. Other cheese boards might profitably follow the example of the one established at Ottawa.

Eastern Dairy School Exams.

In all, nineteen students tried the final examinations of the Long Course of the Eastern Dairy School, at Kingston, of which number fifteen were successful. Besides taking the written examinations upon the different subjects, each student had to take a practical examination upon the work in each department of the school. The following is a list of the successful candidates, arranged in order of general proficiency: G. A. Drake, W. A. Stewart, P. R. Best, R. T. Gillespie, Thos. McFadyean, Geo. Coxhill, H. E. Brintnell, W. J. Quinn, A. E. Murphy, S. L. Brintnell, J. R. Ballard, T. J. Ellis, Thos. Folkard, J. W. Smith, and J. Bates.

Sir,—I take eight farm papers, but like Advocate" best of them all.

T. B. GARNSEY.

Creamery Cold-storage Bonuses.

I am directed by the Honorable the Minister of Agriculture to state that Parliament will be asked to extend the bonus on cold storage at creameries to the year 1905. All owners of creameries, or creamery associations complying with the conditions enumerated below, will be entitled to the sum of $100, to be paid in three installments, as follows:

(1) Fifty dollars, as first installment, at the close of the manufacturing season of the year 1905.

(2) Twenty-five dollars, as second installment, at the close of the manufacturing season of the year 1906.

(3) Twenty-five dollars, as third installment, at the close of the manufacturing season of the year 1907.

All subject to ratification by Parliament.

To be entitled to the payment of the bonus, the following conditions must be fulfilled:

(1) A suitable cold-storage room must be built, in accordance with the new plans (year 1904) supplied by the Dairy Commissioner's Branch of the Department of Agriculture, or with any thoroughly effective and acceptable plan.

(2) Butter must be manufactured at the factory during the summer months, at the average rate of not less than 2,000 pounds a month, and an accurate statement of the quantities sent to the Department.

(3) The temperature in the said cold storage must be maintained continuously during the summer months under 38 degrees F., and a statement of the temperature recorded day by day on forms supplied by the Department, must be forwarded at the end of each month to the office of the Dairy Commissioner.

(4) All applications for the bonus must be sent in before the 1st of July, 1905. Any application after that date will not be considered.

Plans showing the style of construction recommended for the insulation of the refrigerator, for either the cylinder system or the circulation system, will be furnished free of charge on application to this office. Experts will be sent whenever possible to give instructions on the spot if application is made to the Dairy Commissioner, Ottawa.

J. A. RUDDICK,
Dairy Commissioner.

Two Urgent Needs in Dairying.

In reply to an enquiry we might say that it is not the intention of the Dairy Commissioner, Mr. J. A. Ruddick, to hold a dairy conference similiar to those of the past couple of years in Ottawa this spring. However, it will probably be found desirable to have one next autumn. The experience of the season of 1905 in Canadian dairying will then be fresh in mind, and with the actual situation present and prospective in sight, plans can be matured by the leaders in dairy educational work and in the trade, that will have a useful bearing on the convention and dairy school programme of the winter of 1905-6. Mr. Ruddick will probably visit Europe during the coming summer, and will doubtless pick up many fresh points of interest to lay before the autumn conference. With regard to cheesemaking, Canada has won a place of the very best repute in the world's market by methods which are steadily becoming more uniform. From time to time improvements are found needful in some of the details of the process, but in the main it can be pronounced "good."

There are other points, however, that require special and careful consideration, and one of these is the patron end of the business, in order that the milk supply be maintained at a uniform degree of excellence. By advanced factory methods some of the difficulties arising from defective milk can be mitigated, but, once there, they cannot be entirely eliminated, and in the end will work out to the detriment of the industry and the patron. As suggested in last week's "Farmer's Advocate," the factory and the patron might be brought into closer touch through the instrumentality of the travelling instructor, who, in addition to his work in the factories, should visit the farms where the milk is produced.

Leaving out of consideration for the present the question of transportation and fluctuation in prices, probably the weakest link in our dairy chain will be found in the defective curing-rooms. The four Dominion curing stations at Cowansville and St. Hyacinthe, P. Q., and Brockville and Woodstock, Ont., which have served a valuable purpose in demonstration, will be continued this season as before, except that in two of them (Woodstock and Cowansville) the cooling will be done with ice instead of mechanical refrigeration, which, while it gives excellent results, is too expensive for small plants. There is opportunity for most valuable work on behalf of the dairy industry in determining cheap and efficient materials and methods of insulating cool-curing rooms for cheese, and butter factory refrigerators, and we trust that the Dairy Commissioner's work in these directions will be fruitful of practical results at an early date.

Buttermaking Starter.

At the Ohio Dairymen's Association meeting, Mr. C. E. Gammill described his method of making a starter for buttermaking as follows: "I prefer to buy a good pure culture, fresh from the laboratory. I select some good clean milk, perfectly sweet, and then heat it to 180 degrees F., and hold at this temperature for about thirty minutes, then cool down to 75 degrees and put about a quart of it in a glass jar that has been sterilized, and add the pure culture, being careful not to fill the jar so full but that you have ample space to shake, and shake it often for the first hour or two, to be certain that your culture is all dissolved and thoroughly mixed with the milk; then place it in a warm place or bucket of warm water about 75 degrees F., and keep it warm till the milk begins to curdle, when it is ready to put into the milk which has been selected to make the starter, and which has been heated to 180 degrees F., as described. In pasteurizing the milk for the starter we should be very persistent in stirring it; not with an old tin dipper that has a thousand bacteria to the inch, nor with a wooden stick or paddle, but with a metallic stirrer made for the purpose, one that you can keep absolutely sterilized.

"I first select enough milk for the amount of starter wanted, in proportion of one to forty, or a quart to ten gallons; I strain the milk into the ten-gallon cans, and they are placed in a galvanized tank with steam and water connections, and in this tank all my starter is made. After pasteurizing the milk I draw off the hot water and immediately cool it down to 75 degrees F. We have a common Ideal galvanized tank that will hold ten cans. This sits on the operating-room floor, and is just the right height to let the tops of the cans be above the water, and it is convenient to lift the cans out and in; we made a noiseless heater in the bottom of the tank, also laid some pipes in the tank to set the cans on, so that the hot or cold water can get under and all around them. If, in the morning afterwards, the starter does not seem to be quite ripe—that is, thick enough—or has not developed acid sufficiently, we can again warm it and cool it with very little trouble. We find that the lactic acid germs do not thrive or multiply very fast below a temperature of 55 degrees F.

"Now, take a quart of the starter and put it into ten gallons of the pasteurized milk, and stir thoroughly for the first hour; in about 20 hours, holding the milk at 75 degrees, it will curdle and have developed enough acid, and is ready to put into the cream. First, save out enough mother starter for the next day, proceeding from day to day along the same line till your starter goes off flavor. Then be sure to discard this starter and make another, as a poor starter is worse than none.

"Cleanliness will have more to do with keeping the starter in good condition for a longer period than anything else, and must be practiced from the start and kept up till the finish if you can expect good results. I seldom use a starter longer than a week or ten days, even if it may seem to be all right."

Dairying Maintains Fertility.

Professor Curtiss, at the recent dairy convention at Cedar Rapids, Ia., told why dairying maintains the fertility of the farm. He said: "In selling $1,000 worth of wheat from an Iowa farm at present prices we sell with it about $350 worth of fertility. In selling $1,000 worth of corn we sell about $250 worth of fertility or constituents which would cost the farmer this amount if he were obliged to buy commercial fertilizers to maintain the fertility of the farm. But we can convert $1,000 worth of corn into beef, pork or mutton and sell it in that form and not remove over $25 worth of fertility from the farm, or we can convert $1,000 worth of feed into butter and not remove a single dollar's worth of fertility with it. Butter is almost wholly pure fat or carbon, and it adds nothing to the value or productive capacity of the soil."

Homemade Pasteurizer.

Pasteurized milk can be prepared by the housekeeper, as follows: Put the milk in a small-mouthed glass bottle which has been cleaned with boiling water. Stop the mouth of the bottle with cotton batting or absorbent cotton. Place the bottles in a wire basket, and immerse the basket in a pot of cold water, or a pan can be placed in the pot, upside down, and the bottles stood on it. Heat the water gradually to a temperature of 158 to 165 degrees. Keep the water at the same temperature for about 30 minutes. Remove the bottles, cool quickly, and put them in a cold place. If the milk is to be used at once, it can be given when it has reached a temperature of 98 degrees.—[American Dairyman.