and not to leave this work until the time of statute labor, usually in June, when the ground is hard and dry.

With the money which can be spent build permanent culverts, permanent bridges, buy machinery, buy gravel pits, prepare gravel for hauling, construct drains, operate the machinery.

Use the statute labor as far as possible in drawing gravel or broken stone.

Do not leave the gravel or broken stone just as it drops from the wagon. Spread the metal

Crown the road with a rise of one inch to the foot from side to centre so as to shed water from the roadway to the drains.

Give the open drain a good fall to a free outlet Lay the underdrains where needed.

Drain thoroughly. Keep the road surface dry. Keep the earth under neath the surface dry.

Use road machinery

Use graders, stone crushers and road rollers.

Improved machinery is as necessary for good and economical work as are self binders and steam threshers

Employ one man to take charge of the machinery. He will become experienced and do better and cheaper work

The same teams should be always employed to operate the graders. They become accustomed to the work and give better service.

Do not cover an old gravel road with sod and earth from the sides of the road. Turn this earth and sod outward, and raise the centre with new gravel.

Adopt every means to secure a hard, smooth, waterproof surface.

Do not let stones roll loosely on the road.

Do not let ruts remain. They make travelling difficult, and spoil the road by holding water.

Make repairs as soon as the defect appears.

Use wide tires.

Improve the drainage of the hills. Make the crown of the roadway higher than on level ground.

Change the location of the road if a steep hill can be avoided.

Do not use wood for culverts. Use concrete, vitrified pipe or stone.

Do not build wooden bridges. Use iron, stone or concrete.

Build good roads.

CARE OF MILK FOR CHEESE FACTORIES.

By J. H. Findlay, Instructor in Home Dairy, Guelph.

Patrons should exercise great care in the handling of milk supplied to cheese and butter factories. The cows should be kept in clean, light, warm, and well-ventilated stables during the winter. Food likely to taint the milk should not be fed at any time. They should have access to pure water and salt at all times. The cow's udder should be brushed with a damp cloth or with a soft brush before commencing to milk. The milking should be done with clean, dry hands, and as quickly as possible, care being taken to get the "strippings," which are the richest part of the milk.

The main points to observe in caring for milk are:

1. Immediately after milking strain through a fine wire and cloth strainer.

2. Remove the milk as soon as possible to a place where the air is pure.

3. Aerate by using a dipper, by pouring, or by an aerator.

4. Keep the night's and morning's milk separate as long as possible. Use pails hung on hooks fastened to a pole under roof to hold each cow's milk separate over night.

5. Do not cool milk for cheese-making, unless when holding Saturday night's and Sunday morning's milk until Monday. In hot, muggy weather, or at any time when it is likely to be over ripe, milk should be cooled.

6. Cool milk for the creamery to 60° or below after aerating.

7. Protect the milk from rain and sunshine by having covered stands with latticed sides to allow a free circulation of air around the milk can or pails.

8 Wash all cans, pails, etc, immediately after use, in warm water, then with scalding water, and, where possible, steam them Wash cans at the factory or creamery wherever practicable

9. Do not return whey, sour skim-milk, or buttermilk in the milk can.

THE CARE OF MILK.

LET US KNOW HOW YOU DO IT.

We would like a number of our readers, who supply milk to a cheese factory or creamery, to send us answers to the following questions:

(1) In what way do you guard against uncleanliness when milking?

(2) Do you strain the milk?

(3) What plan do you adopt to have the milk properly aerated?

(4) In what way do you keep the milk over night?

Make the answers as short as possible, and let us have your experience on these points.

In reply to your questions about milking and taking care of milk would say:

1st Give the cows a proper place to lie down on. Have the same well bedded and in most cases little more is needed but to brush off the flank and udder thoroughly with the hand, and in this no time is lost, as the cow has let down her milk by the time this is done.

2nd. Yes, have a small frame that will lie on top of the milk can; slip over it a two-ply strainer of cheese cotton. This is simple, perfect and easily kept clean, and is also cheap.

3rd. Take the milk away from the stables after milking and pour into pails. Then use a quart dipper in pouring the milk; expose the milk as much to the air as possible.

4th. Either on the milk waggon or on the ground and not too much in a can.

In addition to aerating, if the night is very close and warm, set the pails of milk in a trough filled to the proper depth with cold water, stir the milk in the pails a few times with a dipper.

R. McCROW.

June 10, 1898. Princeton, Ont.

P.S.—We have been handling milk from twelve to twenty-five cows for thirty years and we think if the above simple rules are observed milk of a first-class quality can be sent out fit for any purpose. R. McC.

WHAT SOME PEOPLE SAY.

SAGINAW, Mich., June 11th, 1898.

Editor FARMING:

Enclosed you will find $1 for value received and to come. I take a deep interest in the subjects treated in FARMING, and am much pleased with it, having found valuable information therein on subjects on which I desire to become posted. The contents are fresh—something not always seen in the columns of agricultural papers. Yours,

W. H. MUIRHEAD.

CORRESPONDENCE.

AWARDING PRIZES IN A MILK TEST.

Dr Babcock's Proposition Criticized: The Simplest Method the Best.

Editor of FARMING:

I read with much interest the article in FARMING, June 7th issue, under the above heading. It seems to me going a long way about to reach the end, and rather confusing to the average dairyman. Now, if we want to fix a scale of values for milk and its products and to do so intelligently, what we must consider is the true or market value, not a fictitious value. Milk here is used most extensively to make cheese; 2nd, butter; 3rd, as whole milk for town and city trade. What we should consider then is its value as shown to the greatest number, and that will be patrons of cheese and butter factories. Milk made into butter gives us butter, skim-milk and buttermilk; if we consider the value of these three we have the whole value of milk for butter-making And for all intents and purposes for cheese also, by giving full value for the skim-milk, &c.

First, then, we will consider the value of skim milk. Experiments have shown that hogs bought, weighing one hundred pounds and fed nothing but skim milk for fifty six days gave a return of twenty-two cents per cwt. for skim-milk fed. (*Hoard's Dairyman*, June 10th, page 351). This with prices at $4 50 per cwt. for hogs. If fed to young pigs, calves, &c., even a higher value is shown. We may conclude then that, with hogs selling at $5 per cwt., skim-milk is worth twenty-five cents per cwt., and in feeding hogs we have then a practically unlimited market for our skim-milk. If, then, we want as extensive a market for our butter we must depend upon export, and experience has shown that twenty cents per pound is seldom exceeded. This with three and a-half cents per pound off for making, leaves the patron sixteen and a-half cents which is not over nineteen cents per pound for butter fat. Taking the relative value of hogs and butter we will find that we more frequently get $5 per cwt. for hogs than twenty cents for butter for export. Just now farmers are selling hogs at $4.75 per cwt., and butter is bringing seventeen cents, or making off, thirteen and a-half cents to patrons.

Now, if we consider the relative value obtained for our skim-milk and butter, we would place skim-milk worth twenty-five cents per cwt. and butter-fat nineteen cents. But, giving butter one better, we will place skim-milk at twenty-five cents per cwt. and butter-fat at twenty cents. This is the value of milk to the producer and patron of a butter factory. If the milk were made into cheese, then there is the butter-fat, solids not fat, and whey to be considered, and for this purpose Prof. Dean's plan of adding two per cent. to the butter-fat reading is giving universal satisfaction to our factories and might with advantage be used in public tests to determine the value of the milk. And, again, Dr. Babcock's scheme is upon the same principle, as he says it may be necessary to fix a lower ratio between the fat and solids not fat, and, of course, this ratio will depend largely upon the price obtained for butter-fat and the other products. If butter would sell for twenty-two cents or twenty-three cents per pound, and hogs at $4 per cwt. or less, then the butter-fat would be about ten times more valuable than the solids not fat. But these are not the values in this country, and consequently the ratio would be too high. Taking the fat at eight times the value of other solids would be nearer the value to our patrons.

Here, then, are three different ways of taking the value of milk, and, if we compare them in actual work, we will find they bring us about the same result. The first, then, is the simplest, giving but little work to the tester, and thereby reducing the chances of error. And what is of first importance is that it is plain to every dairyman who knows what skim-milk and butter are. But when we commence to figure on fat, solids, etc., not one dairyman in ten understands how the value is arrived at, consequently the test loses much of its value as a lesson to dairymen. Often have I been asked by dairymen to explain "how they figure that thing anyway."

Now let us compare the three ways, taking a cow giving forty pounds of milk, testing 5 per cent. fat and 9.5 per cent. solids not fat, with another giving seventy pounds of milk, testing 2.5 per cent. of fat and 9 per cent. of solids not fat. With skim-milk and butter-milk at twenty-five cents per cwt. and butter-fat at twenty cents per pound, we will find that, for $1 the first cow makes, the second cow makes $1.32. Taking Prof. Dean's plan and adding .2 per cent. to the butter-fat reading we will find as cheese cows that, for $1 made by first cow, the second makes $1.37. Then, taking Prof. Babcock's plan and allowing fat to be worth eight times the other solid, the ratio between the two cows is as $1 to $1.30. Practically an agreement, and the first plan being the simplest and easiest understood is, I think, the best.

Then there is the points allowed for time in milk. This should be struck out altogether, as it is really a hard matter to decide and keep from cheating. As our tests are conducted year after year, everybody has had plenty of opportunity to arrange to have their cows fresh, and, as a matter of fact, all the best cows in the tests have been fresh or within two months or so of it, and a cow, that won't make as much butter two months after calving, don't deserve any encouragement. Then there is the score for conformation that is no more use in a milk test than a "tail on a pig." If our judges are infallible, why have a test at all? But it is because we have much to learn as to the relative value of different points in a cow that milk tests are valuable, and the best cow is the one that produces the most milk in any case. It would be an outrage if a cow, after winning by the scales and test, were defeated through being scored low.

Now, knocking off all useless and cumbersome conditions, see how simple the test becomes. If we just take the true value of milk and consider the butter and skim-milk and buttermilk, a test that does not consider all that is of value in milk, is no test at all. The bye-products must be considered, because they are valuable, and even whey, we know, has much higher feeding value than the analysis might show; just as roots (90 per cent. water) have a higher value. This is seen more clearly in hay. We know that water and hay have not the same value in practice as grass. But cows do best on grass in warm weather, on turnips when kept warm, and likewise skim milk and whey loses much of its value if fed cold and in a cold place. But this is the fault of the man, and the cow should not suffer because he is too lazy or stupid to make the best use of her product.

Yours truly, GEO. RICE,
Currie's, Ont.

THE MILK TEST AT THE FAIRS.

Editor of FARMING:

I am very much pleased to see that the milk test at our fairs is receiving some attention. In a recent issue of FARMING, Prof. Dean draws attention to the test used at the Provincial Dairy Show held at Gananoque in 1894.

Now, Mr. Editor, I consider that it was a most unfair test. It was no test at all. It was simply offering a bonus to the cow that was capable of producing the most water in her milk.

In the first place the cow is allowed so much for every pound of milk; then she is allowed so much for all the butter fat, and so much for all the other solids that are in her milk. Take the butter-fat, casein, ash, and sugar out of milk, and there is nothing left but pure water and I cannot see the object in paying a cow for producing water and I am very much pleased to see by the last issue of FARMING that there are prospects of having a test on a more reasonable basis.

Yours truly,
JOSEPH YUILL.

Carleton Place, Ont., June 14th, 1897.

LIST OF PRINCIPAL CANADIAN FAIRS FOR 1898

Industrial Fair, Toronto ... August 29th to Sept. 10th
Winnipeg Exhibition, Winnipeg, Man. July 11th to 16th
Western Manitoba, Brandon, Man.. July 19th to 22nd
Stanstead Live Stock Assn, Stanstead, P.Q..... Aug. 24th and 25th
Eastern Exhibition, Sherbrooke, P.Q. Sept. 5th to 10th
Western Fair, London, Ont..... ...Sept. 8th to 17th
Quebec Exposition Co., Quebec, P.Q... ... .Sept. 12th to 21st
New Brunswick Exhibition Co., St. John, N.B.. .....Sept. 13th to 23rd
Central Canada Fair, Ottawa.....Sept. 16th to 24th
Southern Fair, Brantford ....Sept. 17th to 22nd
Provincial Exhibition, Halifax, N.S..... .....Sept. 22nd to 29th