prominent tractor builders. In one type air enters at the top and is drawn downward through the central tube. The lower half of this tube is flared out "bell shaped," and is supported on a metal float or elliptical cross section slightly smaller in diameter than the bottom of the bell. The air passes through the narrow ring-shaped opening between the bell and the float at very high velocity. On account of the shape of the air stream large air bubbles passing through the water are impossible, and on account of the high velocity of the air, the heavy dust particles are thrown into the water. The air itself is so thoroughly mixed with the foaming water that the lighter dust particles are also trapped and the mud settles to the bottom of the tank, where it can be drained off daily or as often as is necessary.

This thorough mixing of the air and foaming water settles the dust, but the next big problem is to separate the water particles from the air before it leaves the washer. A series of baffle plates does this very effectively, and experience has shown that not over one quart of water is evaporated in an ordinary day's operation.

The restriction of the air flow through the washer is practically negligible, being above two inches of water under full engine load, which is very small compared with 15 or 20 inches through the carburetor. Many tests have shown that in spite of the slight frictional resistance, engines have developed slightly more power with the washer than without.

An overflow is provided to limit the high water level, and an indicating disc attached to the float tube not only shows the amount of water in the tank, but also automatically shuts off the air inlet when the water level reaches the low point.

While extremely high efficiency is claimed for this air washer, the makers wish to call attention to the fact that the washer can be placed to better advantage than in the very dustiest part of the tractor, and that all air piping from the washer to the hot air stove and thence to the carburetor should be absolutely tight. Dust is such a decided troublemaker, once it gets into the engine cylinder, that every precaution should be taken to keep out every possible particle.

THE DAIRY.

Kill the scrub bull and avoid continuing to slaughter uprofitable cows.

Beauty XI is the first United States Ayrshire to complete two Roll of Honor records in succession. Over and above this she has five records to her credit averaging 11,282 lbs. milk and 471.91 lbs. fat.

In the corn-belt states it is said that perhaps 80 per cent. of the stalk and leaves of corn is wasted annually. We should not permit anything like this condition to exist in Canada. Build a silo to take care of the cows next winter.

Twelve years ago a New York farmer bought a pure-bred dairy cow for $150, and recently she sold in the sale-ring with 33 of her own direct descendants, for $58,600. It looks as though it pays to breed good dairy cattle.

Breed societies should prevent, by some means, absurd names for animals. Fancy a cow named Creampot Pontiac Korndyke. If she is good enough to produce 795.9 lbs. milk and 40,561 lbs. fat in 7 days, she deserves, and so does the breed, a more thoughtful name.

France is buying dairy cattle from the United States to restock the devastated areas. Heifers from eighteen months up are required, and no cow over 6 years old is accepted. Two thousand head are to be shipped by the end of July. Canadian breeders should have some of this business.

Milk Testing on the Farm.

EDITOR "THE FARMER'S ADVOCATE":

While a considerable number of our farmers have begun to test their milk regularly, there is still a large percentage who evidently have not realized the benefits derived from this practice. Yet it is quite possible that many of these latter have high-producing, as well as low-producing, animals in their herds. Only recently this fact has been well demonstrated by the case of the record-breaker in South Oxford County, whose real value would not have been recognized had it not been for the carefully-made tests which are now possible on every Ontario farm. In the following paragraphs a brief outline of the most commonly used test, the Babcock, with approximate cost, is given.

The chief requisites for the test consist of a hand-turning machine, four whole-milk bottles, a pipette, a separate graduate jar, and a supply of sulphuric acid. On the average, a suitable testing outfit for private use on the farm costs from $10 to $15, depending on the capacity of the machine used. The chief points to be noted in connection with the test are as follows:

1. The temperature of the milk should be from 60 to 70 degrees Fahrenheit.

2. In order to secure a representative sample, mix the milk thoroughly.

3. Measure 17.6 c. c. (cubic centimeters) of milk into a milk test bottle.

4. Then add to the milk in the bottle 17.5 c.c. of commercial sulphuric acid (at a temperature of 60 to 70 degrees F.) having a specific gravity of 1.82 to 1.83. For this purpose use a graduate jar and pour the acid into the test bottle, the latter to be held in a slanting position so that acid may run down the side and under the milk.

5. Keeping the neck of the bottle open, mix the milk and acid thoroughly by a gentle circular motion.

6. Place bottles in the machine, being careful that they are properly balanced, and turn for five minutes at speed indicated on the machine.

7. Now add hot water to the mixture to float the fat; replace bottles in the machine and whirl for two minutes longer. Water should be at a temperature of 160 to 170 degrees F.

8. Transfer bottles from machine to a water bath, in which the water should be at a temperature of about 140 degrees F., and also reach the top of the fat. Then take the reading.

This, in brief, is the method of making the test. A few incidental suggestions in carrying out the operation, however, may be worthy of mention. Accuracy in measurement and cleanliness in all operations are of prime importance. All utensils should be thoroughly cleaned after use. Frozen milk should be heated before being tested, and all milk should be allowed to stand at least an hour after being drawn from the cow. Sour or thickened milk may be tested by adding an alkali such as strong ammonia or lye, and mixing well with sample before testing.

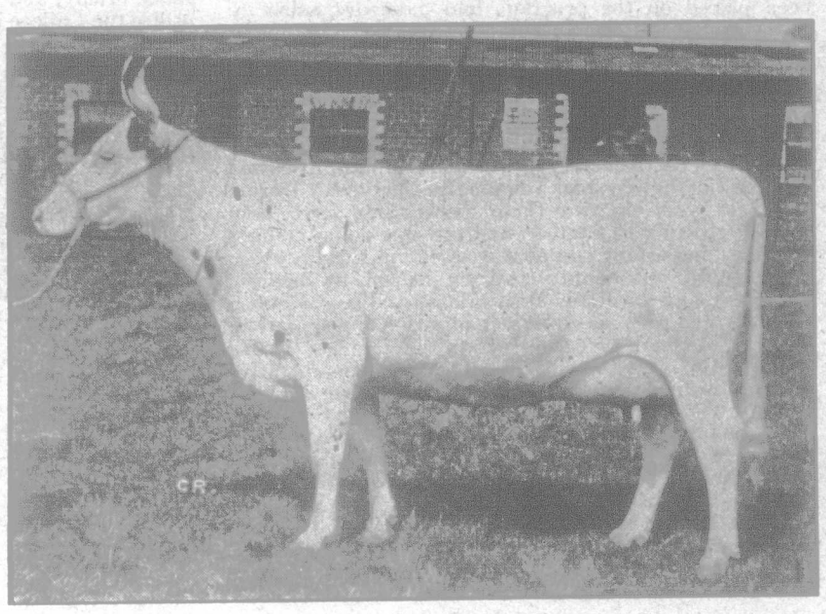
Soft or distilled water should be added to the test bottles. Where water is hard, the addition of 8 or 10 c. c. of sulphuric acid per gallon will soften it.

By observing these principles and using a little care, anyone can make the test on his own farm. The cost is very small, and the operation requires but little time, and this, together with weighing the milk, enables the farmer to determine the value of each individual member in his herd.

W. J. L.

Durham Co., Ontario.

(Note.—Undoubtedly the Babcock test which W. J. L. has fully described in the above article is of great value to the dairyman in ascertaining the quality of milk the various individuals in the herd are producing. However, coupled with the test should be daily records of the milk flow. Quantity must be considered as well as quality in the case of our dairy herds. The scales for keeping individual records are not expensive, and should be found in every stable. Weighing and testing go hand in hand in determining the value of the herd. Were it not for these two agencies, many of our present-day noted cows would never have been heard of. Without testing, you cannot tell but that you may have a champion in your herd. Give every individual a chance. —EDITOR.)



Overton Lady White.
Champion Ayrshire female at Glasgow, 1919.

Change Necessary in Methods of Buying Milk.

EDITOR "THE FARMER'S ADVOCATE":

One of your recent issues stated how the Ontario Milk and Cream Producers' Association had secured better conditions for testing and grading cream, also that the Government in 1916 passed a law (The Dairy Standards Act) for the sale of milk to be regulated according to the standard of butter-fat contained—yet this law has not been enforced. If such a law would be in the best interests of dairying and afford a positive protection from adulteration to the consumer, why is it not enforced?

Owing to frequent harassings of a number of milk producers in this vicinity, by inspectors, I have been prompted to go into this matter in detail, not as the squeal of someone who wishes the consumer to pay the standard price for milk which is below that standard, but rather as an appeal for justice to all parties concerned. The standard required by our city markets is 3.25 per cent. butter-fat, and 12 per cent. total solids. All milk shipped to these markets below this standard places the shippers liable to a fine, if the city by-laws are enforced, and in many cases during past years they have been. I make no reference to cases where the milk has been so low in quality as to prove adulteration, but to those cases where the quality has been below the standard required, yet due entirely to conditions over which the producer has no control. When it is a well-known fact that conditions over which the producer has little or no control will affect both the quantity and quality of milk, and that some of the best herds, both grade and pure-bred, in Ontario during fly time and excessive heat will not produce milk over 2.8 to 3 per cent. butter-fat, a product that under existing conditions subjects the producer to a fine, then it is time some change was made in our present system. I have before me the tests by reliable officials for a town requiring the supply of eight of the best herds in the locality, and during four winter months the average is not above 3 per cent. butter-fat, and one test showed 2.6 per cent. What kind of a law is it that fines a man for shipping 3 per cent. milk and allows nothing extra for butter-fat over the standard of 3.25 per cent. required?

Of course, it must be admitted the cities do not ask us to ship them milk over the 3.25 per cent. standard in butter-fat, yet anyone familiar with dairying will admit it is impossible for any shipper to maintain a uniform standard at all seasons of the year. In many instances the tests made by inspectors have been proved to be very inaccurate, yet these tests were sufficient to convict. If the present system of buying milk is allowed to continue, the producers must have representation, and all tests or investigations will have to be made in the presence of at least two parties, one chosen by the consumer and the other by the producers, and, in cases of dispute, a disinterested third party should decide.

If milk is bought by the standard of butter-fat entirely, it removes the possibility of adulteration of any kind, as there would be no gain by such methods, and it would effectively protect the consumer. Dairymen would be encouraged to produce milk of good quality, and, whatever their product exceeded the Government standard, for this they would receive a just remuneration, while those unfortunate enough to be at any time below this standard would suffer only a reduction in their pay cheque in such proportion as their milk proved to be below the standard required. Further, it would put the fine and police decoration entirely out of the question.

In a nutshell, the farmer would get pay for exactly what he produced, and the consumer would not have to pay for something he was not getting. The sale of milk, according to the method suggested, has its difficulties, such as the number of tests required monthly to establish the standard of milk shipped by producers, also the sliding scale for payment of milk according to quality, but when we know of many good dairymen put out of business by the constant harassing of inspectors under present conditions, and at the same time the apparent shortage of dairy products to supply the ever-increasing demand of the urban population, in the interests of all concerned, it is time we milk producers demanded better conditions.

To bring these conditions about we must have united action, as individuals we are helpless. Let our producers' associations in the Province take the matter up and petition the Government to enforce the law they have already passed.

However, this article only represents the humble opinion of one person, yet I am firmly convinced that the present system for buying and selling milk has outlived its usefulness, and, as a producer, I would like to hear the views of others, and hope they will take up the matter in the near future.

Wentworth Co. SUBSCRIBER.

HORTICULTURE.

Cultivating and Harvesting Raspberries.

Thorough and clean cultivation is essential for raspberries, and an effort should be made to keep all grass and weeds out of the rows, and the suckers, which are constantly growing up, destroyed. Cultivation should not be very deep, as there is a tendency to injure the roots in this way, with the result that the suckers become more numerous and more difficult to control. It is a good plan to cultivate just deep enough to break the crust and maintain a mulch on the soil. Deep cultivation at first may have a tendency to force the roots growing out to the side, to go down deeper so that later on, when shallow cultivation is practiced, there will be no danger of these permanent roots being interfered with. As a general rule, when the picking is on, cultivation is discontinued, but if it is possible to do so without serious injury to the fruit, it would be a good plan to run through with the cultivator between each picking. It is especially desirable to do this in a dry time. After the fruit is harvested, going through with a cultivator once or twice will loosen the ground up sufficiently to permit a cover crop to be sown, which will check the growth of the plant and protect the roots over winter. Late fall cultivation should never be practiced with raspberries, because