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the  
Kiddie's  
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**Farm Dairying**



Golden Led of Ingleside

**XVI.—The Babcock  
Milk Test.**

By LAURA ROSE,  
Demonstrator and Lecturer in Dairying  
at the Ontario Agricultural Col-  
lege, Guelph, Canada.

[Copyright, 1911, by A. C. McClurg & Co.]  
**T**HE Babcock tester reveals the  
profitable and unprofitable  
cows. It condemns or praises  
the work of the separator. It  
reveals the loss of fat in whey and but-  
termilk, and it puts a check on dishonesty  
by having milk and cream sold  
on the value of their fat content. No  
dairyman should feel his equipment  
complete without one. It is simple,  
quick and cheap. A four bottle Bab-  
cock tester, complete, can be had for  
\$5 or \$6.

Milk testing is not a complicated or  
tedious thing to do. A careful boy or  
girl fourteen or fifteen years old can  
soon learn to make correct tests.  
There is no better way of getting the  
children interested in the cows.

The Babcock test is a simple, quick,  
cheap and reliable test for determining  
the percentage of fat in milk, cream,  
etc.

**General Rules For Making the Test.**  
All the glassware must be perfectly  
clean. Wash it in a strong solution of  
soda and rinse it well afterward.

Have a representative sample of the  
milk or cream to be tested. It must be  
from the entire milk, well mixed. Sam-  
ples of cream, skim milk, buttermilk  
and whey must be taken from the bulk  
after being well stirred from the bot-  
tom to the top. At the time of making  
the test the sample should be poured  
from one vessel to another, so as to  
obtain a thorough and even mixture.  
It should be at a temperature of be-  
tween 60 and 70 degrees.

A 17.6 cubic centimeter pipette  
is used to take the measure of milk re-  
quired. Insert the small end in the  
milk and the other end in the mouth,  
draw up the air and the milk rises in  
the tube. When the pipette is filled  
with milk, quickly place the index fin-  
ger of the right hand over the top of  
the pipette. Hold the pipette on a level  
with the eye and slowly allow a little  
air to get in by slightly easing the  
pressure of the finger. The milk will  
run out in proportion to the air ad-  
mitted. When the milk exactly reaches  
the line indicating the proper  
amount for a test quickly press down  
the finger.

**Every Test Must Be Accurate.**  
A test is of little or no value unless  
it is in every way accurate.

Place the point of the pipette in the  
neck of the bottle, but do not shove it  
in tightly; remove the finger from the  
end, and the milk runs into the bot-  
tle. Blow to get the last drop.

Pour into the acid measure 17.5 cubic  
centimeters of commercial sulphuric  
acid with a specific gravity of 1.82.  
When adding it to the milk hold the  
test bottle on a slant, so as to allow  
the acid to run down the neck and un-  
der the milk and not fall directly on  
top of it.

By giving the bottle a gentle rotary  
motion thoroughly mix the acid and  
the milk. Never point the neck of the  
bottle toward your own face or in the  
direction of any one else. The con-  
tents of the bottle get very hot by the  
action of the acid. The acid dissolves  
all the constituents of the milk except  
the fat, which it heats and liberates.  
Sulphuric acid is dangerous. It eats  
holes in cloth and burns the skin. If  
it gets on the hands or clothes imme-  
diately wash with water. Ammonia  
checks its action on cloth or leather  
and restores the color. The acid must  
be kept in glass or stone jars or bot-  
tles and always kept corked.

When each sample to be tested is  
taken as described put the bottles in  
the machine, placing them so as to  
maintain the balance and whirl for  
four or five minutes. Stop the ma-  
chine and add sufficient hot water at a  
temperature of 140 degrees to float the  
fat into the marked scale space on the  
neck of the bottle. Rotate the ma-  
chine again for two minutes, then  
place the bottles in water at about 140  
degrees, having the water reach as  
high as the top of the fat in the neck,  
and read the fat column when at that  
temperature.

It is well to use a pair of dividers or  
compasses for measuring the fat. The  
points of the dividers should be placed  
at the extreme upper and lower limits  
of the fat column. Then carefully  
place the one point of the dividers at  
the zero mark of the scale. The divi-  
sion at which the other point touches  
will show the percentage of fat in the  
sample tested.

The small divisions of the scale read  
two tenths of 1 per cent, the large  
divisions equal 1 per cent on the whole  
milk bottles. Therefore if the fat cov-  
ers three large spaces and four small  
ones the milk tested contains three and

eight-tenths pounds of fat per 100  
pounds of milk or is said to have 3.8  
per cent fat.

**Testing Cream.**  
Cream test bottles are graduated to  
read as high as 30, 40 or 50 per cent  
fat and are made with a large neck.

Use an eighteen cubic centimeter pi-  
pette for measuring the cream. Rinse  
the pipette with a little water to get  
out the full complement of cream. Af-  
ter mixing the cream and acid add the  
hot water before whirling and whirl  
for five minutes. Place the bottles in  
hot water before reading.

Each division of the scale reads one-  
half or 1 per cent, according to the  
marking.

The proper amount of cream or milk,  
etc., for a test is eighteen grams.

Owing to the small percentage of fat  
in skim milk, buttermilk and whey, to  
get accurate tests double necked test  
bottles should be used.

The amount is taken in a 17.6 cubic  
centimeter pipette and tested in the  
usual way. The milk has to be deliv-  
ered slowly into the larger neck or it  
bubbles out. The scale on the neck  
reads to one-hundredth of 1 per cent.  
One large division reads five-hun-  
dredths or .05 per cent fat.

It is not always convenient nor is it  
necessary to test daily when a yearly  
record is being kept of a herd or when  
milk or cream is delivered at a factory.

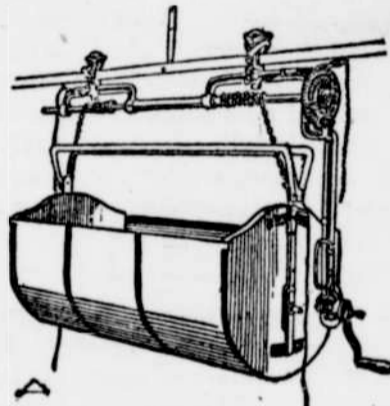
We will suppose a herd test is to be  
kept. There should be a pint bottle  
with a long tight fitting cork for each  
cow. The cow's name or number  
should be plainly written on a label  
which is gummed well on the bottle,  
then given two coats of shellac so as  
not to have the label wash off.

The bottles should be placed on a  
convenient shelf in the milk room sepa-  
rated from the stable. Hanging near  
should be a pair of spring scales set to  
record the net weight of milk. The  
milk pails should be all the same  
weight.

On a board by the shelf should be  
tacked a record sheet to mark the  
pounds of milk at each milking.

To keep the milk from curdling in  
the test bottles a preservative is nec-  
essary. The one commonly used is  
seven parts bichromate of potash to  
one part of corrosive sublimate, but  
three parts of the former to one of the  
latter give better results. This is poi-  
sonous, but as it turns the milk a de-  
cided yellow no one is apt to drink it.  
Put about as much of this powder as  
can be lifted on a ten cent piece into  
each bottle. This amount of preserva-  
tive will keep the sample good from  
two to four weeks, according to the  
heat of the weather. If very warm  
use more. Avoid too much, as it spoils  
the test, giving burnt readings. Pre-  
servative tablets may be procured and  
are more convenient.

The sample is taken night and morn-  
ing by means of a long handled one



THE LITTER CARRIER, A LABOR SAVING  
CONVENIENCE

ounce dipper, and precaution must be  
taken to pour the milk so measured  
into the proper bottle.

When the test is only made fort-  
nightly or monthly, the samples must  
be taken for two or three days, as the  
fat content may vary.

To prepare composite samples for  
testing set the bottles in water at 110  
degrees to melt any cream on the sides  
of the bottles. Mix well by pouring  
from one vessel to another. Take the  
samples as usual, but cool to about 60  
degrees before adding the acid. Use  
slightly less acid than for ordinary  
testing.

**To Find the Pounds of Fat.**

To find the pounds of fat produced  
during the period the test has covered  
multiply the test by the pounds of milk  
given and divide by 100.

To find the proximate number of  
pounds of butter divide the total  
pounds of fat by six and add the result  
to the pounds of fat, and it will equal  
the pounds of butter.

Total lbs. milk given during month...	900	× 3.8	=	342	lbs. fat.
Average milk test during month 3.8%	100				
Total lbs. fat	342				
One-sixth of total lbs. fat	57				

Calculated yield of butter..... 33.9 lbs.

The lactometer is an instrument to  
determine the specific gravity of milk.  
The term specific gravity means the  
weight of a solid or liquid compared  
with an equal volume of water at 39.2  
degrees F. Average whole milk has a  
specific gravity of 1.032, which indi-  
cates that milk is .032 heavier than  
water.

Milk inspectors rely on the lactome-  
ter to detect whether milk has been  
watered or skimmed or both.

In butter and even to a greater ex-  
tent in cheese making the necessity  
for knowing the exact amount of acid  
at the different stages of manufacture  
has introduced the simple, quick,  
cheap method known as the alkaline  
test, which gives the percentage of  
acid present in the sample tested.

This Hart casein tester is used for  
determining the casein content of milk  
and when it is more generally known  
and used is likely to prove valuable to  
cheesemakers.

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