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SAMPLING MILK FOR COMPOSITE TESTS OF
INDIVIDUAL COWS.

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The importance of testing each cow in the herd to determine her butter making capacity, cannot be too strongly impressed upon the mind of every dairyman. In the ordinary dairy herds of Illinois at least **one-third** of the cows are kept at a loss; or, to express it differently, consume the profits that might result from the rational management of the other **two-thirds**.

THERE IS SOMETHING WRONG.

When dairymen waste **food** and **labor** in this manner they are pursuing a short-sighted policy. Much of this mismanagement is due to **neglect** while some is to be explained upon the ground that the **owners do not know how to separate the profitable from the unprofitable cows**. It is the purpose of this circular to show how samples should be taken and a yearly test conducted so that all unprofitable cows may be detected and removed from the herd.

TEST THE COWS.

Since butter fat is the most **variable** and at present the most **valuable** constituent of milk, the ability of any particular cow to produce butter fat in her milk will determine her value as a dairy cow. Since this is true it follows that the milk of each cow should be **weighed** and **tested** for butter fat at intervals throughout the lactation period often enough to insure a close approximation to her annual yield. This can be done with **little or no expense** to the owner and the results will pay large dividends in increasing the productive powers of the herd.

SUFFICIENT BUTTER FAT ESSENTIAL.

In all parts of the state, whether the milk is received at creameries or condenseries or used for direct consumption, **attention must be given not only to maintaining but in many cases to increasing the percentage of butter fat in milk.** Fortunately it is becoming the practice more and more to pay for the milk upon the Babcock test basis, which is the only equitable method. Even at condenseries where milk is paid for by weight alone, the test is carefully watched and must be kept above a certain percent. So it behooves the producer to test his individual cows and thus not only determine which cows are worth keeping but also keep his product above suspicion.

HOW TO TEST.

The most accurate method is to **keep a continuous record of the amount of milk produced by each cow and test her milk at frequent intervals.** This plan gives very accurate results with very little effort, but some dairymen object seriously to the trouble of weighing the milk continuously from each cow. All arguments are in favor of keeping a complete record of each cow's production and in many of the better dairies this is being done. To encourage those patrons of creameries and condenseries who do not realize the advantage of a study of each cow's production, the following scheme is submitted.

DIRECTIONS FOR WEIGHING MILK AND TAKING SAMPLES.

Certain creameries and condenseries have been provided with small cases containing sample bottles, preservative tablets, a circular spring scale, a sample dipper, and a milk record sheet, which they will send out at various times to different herds so that the milk from each cow can be weighed for a week and a composite sample taken for testing. The following directions refer to the taking of composite samples where the creameries are assisting in testing the herds, but they are equally applicable where the testing is done entirely by the owners.

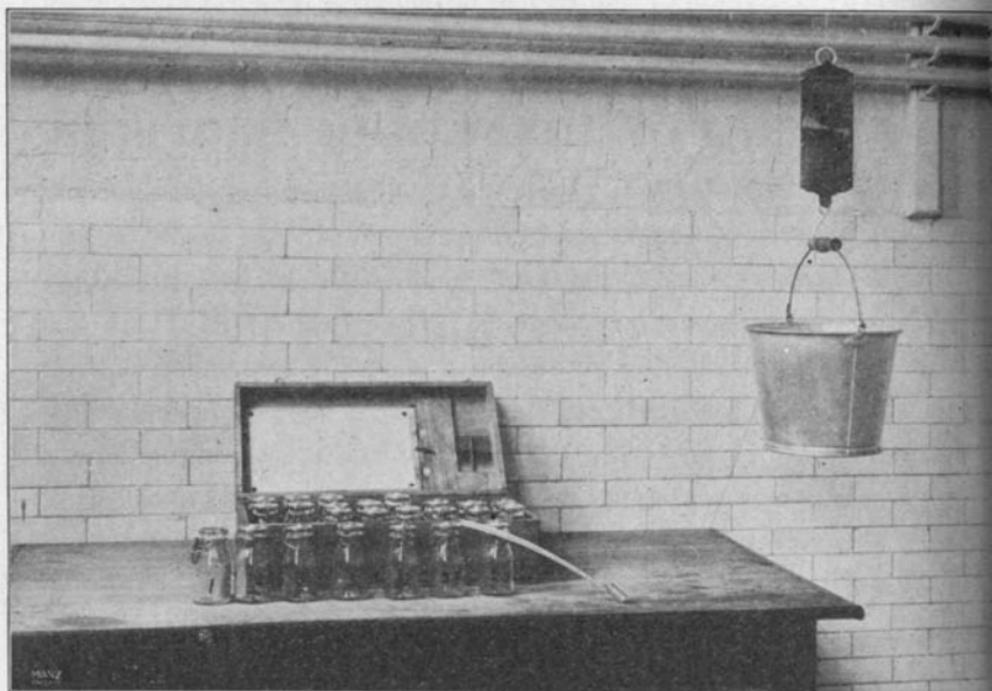
HOW TO WEIGH.

Suspend the scales from the ceiling or otherwise at a place in the barn or milk room where the cans are filled. When the empty pails are of the same weights, adjust the red hand of the scale so that the empty pail causes it to stand at zero, paying no attention to the black hand. This is the position of the hand shown in the cut, in which case the empty pail is said to be balanced, so that the amount of milk in it can be read off directly. If the pails in use are not of uniform weight, balance one particular pail and use it as the weighing pail. **The scales weigh to pounds and tenths of pounds**, the smallest division representing one-twentieth. The amounts should always be set down decimally, as 11.4, 16.7. **Give each cow in the herd a number and keep a list of the names and numbers, so that they will not be confused at successive tests.** Place the case shown in the cut on a shelf or other support near the scales. Attached to a board within the cover is a milk record sheet ruled to accommodate the name and number of each cow at the top of each column, with spaces below to enter the amounts of milk for one week.

SAMPLING.

Each sample bottle should be provided with a corrosive sublimate tablet (poison) to keep the milk from souring. This composite sample is intended to represent all the milk produced by any given cow during

the week it is taken. It is obtained by simply removing with the small sample dipper, a dipper full from each milking and placing it in the bottle bearing the cow's number. **Samples must be taken accurately.** If the milk has been allowed to stand after being drawn, it should be poured from one pail to another before the sample is removed, but when the weighing and sampling of the milk follow immediately upon its withdrawal, two or three rotary motions of the dipper through the milk before the sample is removed will be sufficient.



CUT SHOWING THE ARRANGEMENT OF CASE AND CONTENTS, TOGETHER WITH PAIL PROPERLY BALANCED FOR WEIGHING.

Each time that milk is added to a sample, the bottle should be given a gentle rotary motion to cause some of the preservative to come in contact with the fresh milk and to thoroughly incorporate the cream with the milk and thus prevent the formation of a tough layer of cream which is broken up with difficulty before an accurate test can be made. During warm weather the case and contents should be set in a cool place between milkings to insure the preservation of the samples.

In brief the operation is this: **Balance the empty pail; as soon as done milking weigh and record the amount; take a sample dipper full from the milk and place it in the milk jar bearing the cow's number.** When this has been done for 14 consecutive milkings, the case with all of its contents must be returned so that the samples may be tested and a report made. **This test will be made four times during the year.** The general report of the feeding of the herd as requested on the margin of the sheet, should be filled out carefully each time.

CAUTION.

The average of the tests of the individual cows in the herd need not necessarily be the same as the test of the mixed milk as delivered. The mixed milk may test higher or lower or the same perhaps as the average of the individual tests. This variation has been taken by some men who are testing their herds to indicate that they are not fairly dealt with at the weigh can. A glance at the following table will show that the test at the weigh can will in this case be less than the average of the tests of each cow, for this average does not take into consideration the quantity of milk given by each cow.

Cow.	Milk, lb.	Fat, percent.	Total fat, lb.
1	133.0	4.4	5.86
2	181.2	3.6	6.52
5	230.6	3.4	7.84
8	94.7	4.3	4.07
12	104.4	4.4	4.59
	<hr/> 743.9	<hr/> 20.1	<hr/> 28.88

Average of the tests = 4.02 percent.

Average test or real percentage butter fat = $28.88 \div 743.9 = 3.88$ percent.

The average of the tests of the individual cows is 4.02 percent, but the real percentage of butter fat in the mixed milk of the five cows is 3.88 percent. Attention is called to this matter, so that those who test their individual cows will not fall into this error of reasoning.