

**CIHM
Microfiche
Series
(Monographs)**

**ICMH
Collection de
microfiches
(monographies)**



Canadian Institute for Historical Microreproductions / Institut canadien de microreproductions historiques

© 1996

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming are checked below.

- Coloured covers / Couverture de couleur
- Covers damaged / Couverture endommagée
- Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- Cover title missing / Le titre de couverture manque
- Coloured maps / Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- Bound with other material / Relié avec d'autres documents
- Only edition available / Seule édition disponible
- Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.
- Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from filming / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.
- Additional comments / Commentaires supplémentaires:

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- Coloured pages / Pages de couleur
- Pages damaged / Pages endommagées
- Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed / Pages décolorées, tachetées ou piquées
- Pages detached / Pages détachées
- Showthrough / Transparence
- Quality of print varies / Qualité inégale de l'impression
- Includes supplementary material / Comprend du matériel supplémentaire
- Pages wholly or partially obscured by errata slips, tissues, etc., have been refilmed to ensure the best possible image / Les pages totalement ou partiellement obscurcies par un feuillet d'errata, une pelure, etc., ont été filmées à nouveau de façon à obtenir la meilleure image possible.
- Opposing pages with varying colouration or discolourations are filmed twice to ensure the best possible image / Les pages s'opposant ayant des colorations variables ou des décolorations sont filmées deux fois afin d'obtenir la meilleure image possible.

This item is filmed at the reduction ratio checked below / Ce document est filmé au taux de réduction indiqué ci-dessous.

10x	12x	14x	16x	18x	20x	22x	24x	26x	28x	30x	32x
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The copy filmed here has been reproduced thanks to the generosity of:

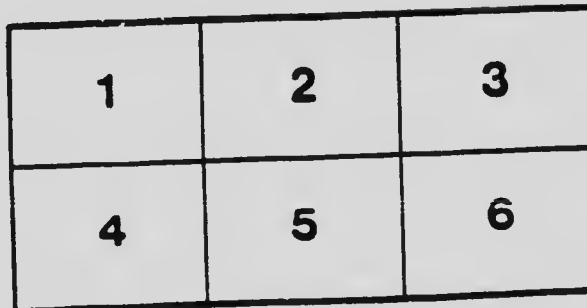
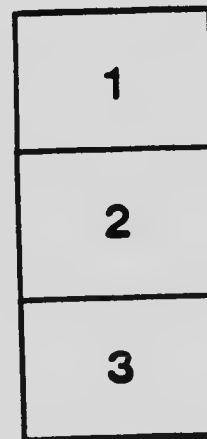
National Library of Canada

The images appearing here are the best quality possible considering the condition and legibility of the original copy and in keeping with the filming contract specifications.

Original copies in printed paper covers are filmed beginning with the front cover and ending on the last page with a printed or illustrated impression, or the back cover when appropriate. All other original copies are filmed beginning on the first page with a printed or illustrated impression, and ending on the last page with a printed or illustrated impression.

The last recorded frame on each microfiche shall contain the symbol \rightarrow (meaning "CONTINUED"), or the symbol ∇ (meaning "END"), whichever applies.

Maps, plates, charts, etc., may be filmed at different reduction ratios. Those too large to be entirely included in one exposure are filmed beginning in the upper left hand corner, left to right and top to bottom, as many frames as required. The following diagrams illustrate the method:



L'exemplaire filmé fut reproduit grâce à la générosité de:

Bibliothèque nationale du Canada

Les images suivantes ont été reproduites avec le plus grand soin, compte tenu de la condition et de la netteté de l'exemplaire filmé, et en conformité avec les conditions du contrat de filmage.

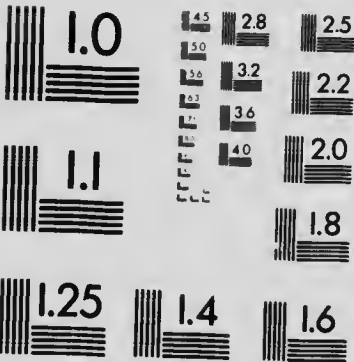
Les exemplaires originaux dont la couverture en papier est imprimée sont filmés en commençant par le premier plat et en terminant soit par la dernière page qui comporte une empreinte d'impression ou d'illustration, soit par le second plat, selon le cas. Tous les autres exemplaires originaux sont filmés en commençant par la première page qui comporte une empreinte d'impression ou d'illustration et en terminant par la dernière page qui comporte une telle empreinte.

Un des symboles suivants apparaît sur la dernière image de chaque microfiche, selon le cas: le symbole \rightarrow signifie "A SUIVRE", le symbole ∇ signifie "FIN".

Les cartes, planches, tableaux, etc., peuvent être filmés à des taux de réduction différents. Lorsque le document est trop grand pour être reproduit en un seul cliché, il est filmé à partir de l'angle supérieur gauche, de gauche à droite, et de haut en bas, en prenant le nombre d'images nécessaire. Les diagrammes suivants illustrent la méthode.

MICROCOPY RESOLUTION TEST CHART

(ANSI and ISO TEST CHART No. 2)



APPLIED IMAGE Inc

1653 East Main Street
Rochester, New York 14609 USA
(716) 482-0300 - Phone
(716) 288-5989 - Fax

COW TESTING

J. W. MITCHELL

Professor of Dairy Husbandry

E. H. FARRELL

Instructor in Milk Testing



World's Champion Holstein Cow, Banostine Belle Dekol, with a record of 27,404 pounds of milk and 1,058 pounds of butter-fat for 365 days.

Manitoba Agricultural College

WINNIPEG, CANADA

Published by authority of the Honorable George Lawrence, Minister of Agriculture
Printed by Jas. Hooper, King's Printer for the Province of Manitoba

MANITOBA AGRICULTURAL COLLEGE,

Winnipeg, Canada.

May 22nd, 1913.

To THE HON. GEORGE LAWRENCE,
Minister of Agriculture and Immigration,
Winnipeg, Manitoba.

Sir:

I beg to present herewith Bulletin No. 8 on "Cow-Testing," by J. W. Mitchell, B.A., Professor of Dairy Husbandry, and E. H. Farrell, Instructor in Milk-Testing, at this College.

This bulletin should prove of special interest and value to the farmers of the Province, on account of both the importance of the subject dealt with and the fact that it supplies and is based upon first-hand information gained from the series of years of cow-testing work carried on by the Dairy Department of the

Yours very truly,

W. J. BLACK,

President.

COW TESTING

Every farmer engaged in dairying is naturally desirous of making his business as profitable as possible; that is, his aim is, or should be, to produce milk and milk-fat as economically and in as large quantities as possible, and to put upon the market a quality of product that will command the highest price.

In this bulletin we purpose dealing with only one of the essentials to this end, but an extremely important one.

Successful dairying begins with the economical production of milk and milk-fat. In this connection we have no desire to minimize the importance of suitable foods and care, and the comfortable housing of the cows, as these are all indispensable to success; but even under these favorable conditions our success will, at best, be but indifferent unless we pay particular attention to the building up of the dairy herd. How shall we go about building up the herd? By strict attention to the units that go to make it up. The average will then take care of itself. No greater mistake can be made than to judge the herd as a whole. We must know the **individual** members of it, and weed out the poor ones, else there will be several that are mere boarders, if not worse. The only way to do this is to systematically weigh, sample and test the milk of each cow in the herd throughout her lactation period; and this is what we mean by Cow-Testing work.

Realizing the necessity for encouraging and developing this class of work in the Province, the Dairy Department of the Manitoba Agricultural College undertook its general introduction in the early part of the year 1910, and has carried it on continuously since its inception. A large number of farmers have taken advantage of the opportunity offered them and good results have followed.

OBJECTS OF COW-TESTING

The objects of the work are several, and may be briefly summarized as follows:

1. To determine the value of each cow in the herd for dairy purposes, and thus be in a position to weed out the unprofitable members.

Set a standard for your cows—say 6,000 pounds of average milk, or its equivalent of richer milk, or 215 to 230 pounds of fat, or 250 to 275 pounds of butter per annum—and work up to it. This is a modest standard, and one that would not satisfy our best dairymen.

2. Another purpose of Cow-Testing is to ascertain the best cows in the herd to rear the calves from for dairy purposes.

Head the herd with a good, pure-bred dairy sire, that comes of a good strain and is a good individual animal himself, and whose immediate ancestors have been large producers. Rear the calves from the best cows in the herd, the best as to performance, conformation and breeding.

3. A third object is to enable the dairyman to feed intelligently.

There is a limit to the capacity of every dairy cow to use food economically. The aim should be to approach but not surpass this limit, and the skilful feeder will make a study of each cow in his herd in this respect. He can do so only through weighing and testing her milk, in a systematic way, throughout her milking period.

FREE OUTFIT AND HOW THE WORK IS CARRIED ON

OUTFIT FOR WEIGHING AND SAMPLING

The outfit supplied the farmer consists of the following:

- (1) A spring-balance that will weigh up to 40 pounds.
- (2) A case of sample bottles, with a bottle for each cow in the herd. The bottles contain a preservative to prevent the samples from souring.
- (3) A small sampling dipper.
- (4) Report forms.
- (5) Printed instructions for weighing and sampling.

The College supplies this outfit, does the testing and fills out the report forms, all free of charge, provided a farmer agrees to carry on the work throughout a cow's milking period. We have found it necessary to make this proviso, since testing for a month or two has little or no value and, in many instances, is most misleading. For instance, some cows that milk well for a short time are not persistent milkers, while others that do not produce quite so much at any one time are very persistent. Again, we find that not only do cows differ greatly as to the average richness of their milk, but, in many instances, there is a marked difference as to the rate at which the milk increases in richness as the lactation period advances.



Fig. 1—Cow-testing outfit, including report form, sample bottles and sampling dipper. In Fig. 2 is shown spring-balance, which completes outfit.

HOW THE WORK IS CARRIED ON

The work is neither laborious nor difficult to understand. In fact it is a great labor saver, since it enables a farmer to weed out and build up our herds, and keep only cows that give profitable returns for the time expended on them and the food fed.

The work of the farmer consists in weighing the milk of each cow in the herd, morning and evening of each of the ten days in the month, ten days apart—say on the fifth, fifteenth and twenty-fifth of the month.

MANITOBA AGRICULTURAL COLLEGE

Dairy Department

Winnipeg

COW TESTING ASSOCIATION

Dairy No.

NAME: John Smith

P.O.: Letellier

Month Ending April 30, 1913

DESCRIPTION OF COWS					3 Days' Weighings of Milk			Total Pounds Milk Calculated	Butter Fat	
Name	Breed	No.	Age	Date of Last Calf	5	15	25		Per Cent	Total Pounds
Blossom	Grade	1	10	Jan. 1	M	11	12	11		
					E	10½	10	10½		
Cherry	Grade	2	5	Jan. 19	M	12	12	12		
					E	11	11	10		
Juliet	Grade	3	5	Jan. 18	M	13	14	12		
					E	12	11	10½		
Meg	Grade	4	4	Jan. 17	M	11	11½	10½		
					E	9	10	9½		
Spot	Grade	5	5	Jan. 17	M	10	9	8		
					E	9	8	8		
Twilight	Grade	6	3	Feb. 17	M	11	12	11		
					E	10½	10½	10½		
Lady	Grade	7	3	Mar. 13	M	11	11	10		
					E	9	10	9		

The above is an exact copy of a report form as sent in to us by a farmer, along with the samples to be tested. It shows that the work to be done by the farmer is not great.

—and taking a sample at each weighing and putting it into the bottle set apart for the individual cow. This is all the farmer has to do.

At the end of the month the samples, accompanied by the report form, are sent in to the Testing Station to be tested to determine the percent. of fat in them.

The bottles are then cleaned and returned, ready for use during the next month, and accompanied by a new report form. Each time the bottles are sent out there is a preservative put into them to keep the samples sweet during the month.

COW-TESTING

MANITOBA AGRICULTURAL COLLEGE

Dairy Department

Winnipeg

COW TESTING ASSOCIATION

Dairy No.

NAME John Smith

P.O. Letellier

Month Ending April 30, 1913.

DESCRIPTION OF COWS					3 Days' Weighings of Milk			Total Pounds Milk Calculated	Butter Fat	
Name	Breed	No	Age	Date of Last Calf	5	15	25		Per Cent	Total Pounds
Blossom	Grade	1	10	Jan. 1	M 11 E 10½	12 10	11 10½	650	3 2	20 8
Cherry	Grade	2	5	Jan. 19	M 12 E 11	12 11	12 10				680	3 0	20 4
Juliet	Grade	3	5	Jan. 18	M 13 E 12	14 11	12 10½	725	3 1	22 4
Meg	Grade	4	4	Jan. 17	M 11 E 9	11½ 10	10½ 9½				615	4 4	27 0
Spot	Grade	5	5	Jan. 17	M 10 E 9	9 8	8 8	520	3 1	16 1
Twilight	Grade	6	3	Feb. 17	M 11 E 10½	12 10½	11 10½				655	3 6	23 5
Lady	Grade	7	3	Mar. 13	M 11 E 9	11 10	10 9	600	3 6	21 6

The above is a copy of the report form as completed by us, after testing the composite samples to determine the percent. of fat in them.

From the three days' weighings, made by the farmer, and the test of the composite samples, we estimate the number of pounds of milk and butter-fat to credit each cow with for the month, record these data on the report form and, after thus completing it, return it to the farmer to be placed on file. Where this work is carried on from month to month, during a cow's milking period, the farmer knows practically the number of pounds of milk and fat to credit her with for the year, and is thus placed in a position to begin the building up of his herd by systematic weeding, breeding, care and feeding.

SOME DATA GLEANED FROM OUR WORK

During the years that we have carried on this line of work we have accumulated a considerable body of information which should prove of interest and value. It is not our intention to insert this in burdensome detail, but rather to present it to the reader in as concise a form as possible, making use of a few short tables to illustrate the points that seem most worthy of special emphasis.

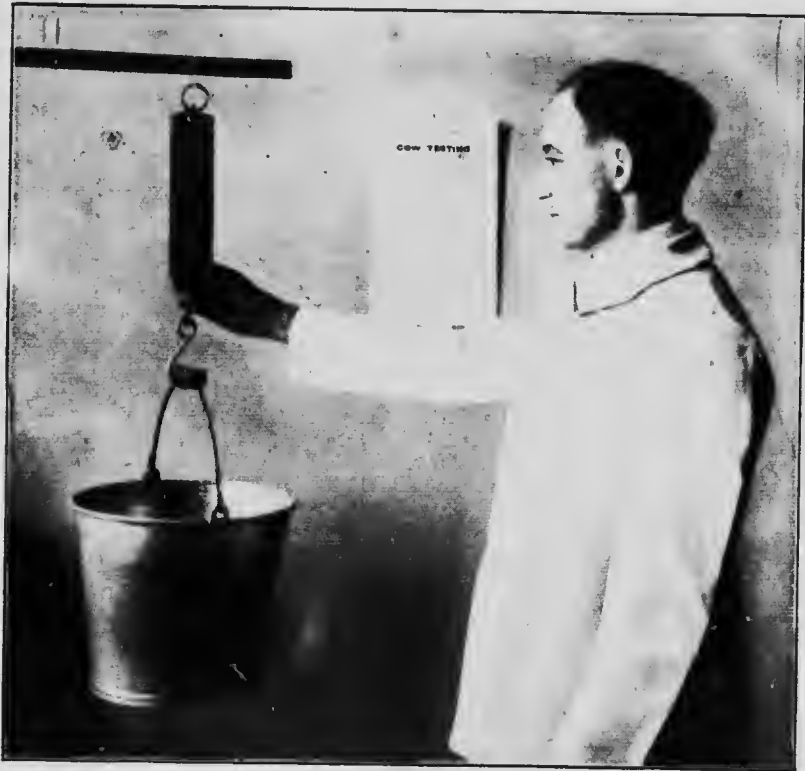


Fig. 2 illustrates how the weighing, and recording of weights, may be conveniently and quickly done.

It will be found that the data contained in these tables will not only throw considerable light upon several points already touched upon, but, in addition, cover important ground not yet dealt with.

All the tables inserted are made up from data gleaned from our work.



Fig. 3—A group of grade cows from the herd whose record is given in Table I.

TABLE I.

Year's Record of a herd built up through several years of persistent and intelligent work, including cow-testing, feeding, care and breeding.

No. of cow	Age of cow	Pounds of milk	Pounds of fat	Average per cent. of fat
1	7	8,124	338.1	4.16
2	6	7,391	289.0	3.91
3	6	7,216	291.0	4.01
4	3	6,223	213.8	3.43
5	5	5,205	223.5	4.29
6	6	6,321	265.4	4.19
7	2	4,126	165.0	4.00
Average		6,376	255.1	4.00

This herd is a grade herd, headed by a good, pure-bred dairy sire. The owner has been carrying on cow-testing work for several years now, in conjunction with the other requisites for building up a dairy herd.

While the above is by no means a phenomenal record, yet it is a very creditable one, and if all the herds of the Province were its equal—which they could be—our output of milk and milk products would be well on to double what it is at present.

The owner is by no means satisfied to rest with the results already obtained, but is gradually raising his standard. Our dairymen would do well to emulate the work he is doing.

The foregoing table will bear careful perusal. For instance, while cow No. 4 produced over 1,000 pounds more milk than did cow No. 5, yet the latter produced more butter-fat than she did, due to the great difference in richness of milk. This points to the necessity for both weighing and testing a cow's milk in order to ascertain her true value for dairy purposes.

TABLE II.

Records of two Manitoba herds, showing the improvement in them since the owners took up cow-testing work in 1910.

HERD No. 1				HERD No. 2			
Record for 1910		Record for 1912		Record for 1910		Record for 1912	
Pounds of milk	Pounds of fat	Pounds of milk	Pounds of fat	Pounds of milk	Pounds of fat	Pounds of milk	Pounds of fat
2,255	114.9	4,354	200.2	4,609	206.4	4,668	206.2
4,252	171.4	4,876	195.0	3,958	169.3	8,187	326.2
3,217	133.6	5,941	255.4	8,283	323.7	7,439	296.7
3,207	133.6	5,319	228.7	7,359	289.4	6,521	264.0
4,420	187.5	6,002	240.0	6,745	274.1	6,501	223.1
3,164	135.2	5,937	243.4	6,304	225.7	6,204	284.0
2,364	96.3	.....	.....	6,116	273.0	5,270	246.2
2,355	75.3	.....	.....	5,604	273.9	7,321	323.4
.....	.....	.....	.....	2,727	117.3	5,216	233.9
.....	.....	.....	.....	7,528	317.8	.....	.....
.....	.....	.....	.....	5,321	233.6	.....	.....
Total	25,234	1,047.8	32,429	1,362.7	64,644	2,704.2	57,327
Aver.	3,154	130.9	5,405	227.1	5,876	245.8	6,369
							267.0

In this table is given the yield of each cow in the herd for the year indicated.

An examination of the record for Herd No. 1, for the year 1910, shows that there were only two cows that produced over 4,000 pounds of milk and not a single cow that produced 200 pounds of fat—one cow falling as low as 75 pounds; whereas for 1912 we find that the milk production per cow ranged from 4,354 pounds to 6,002 pounds, while only one cow in the herd fell below 200 pounds in fat production.

For the **six** cows kept during 1912 the total production was 32,429 pounds of milk and 1,362 pounds of fat, as compared with 25,234 pounds of milk and 1,047 pounds of fat produced by **eight** cows in 1910.

In the average yield of milk per cow there was an increase from 3,154 pounds to 5,405 pounds; while in the yield of fat there was an increase from 130 to 227 pounds per cow.

The increase in the profit, per cow, would be much more marked than the increase in yield, since the cost of production, with the better cows, would be very materially reduced.

While the improvement in Herd No. 2 was not so great, partly on account of its being a much better herd to begin with, yet it must be regarded as quite substantial, since the increase in the average yield per cow was, approximately, 500 pounds of milk and 21 pounds of fat.

It will be noticed that in each herd there is a decrease in its size. This is due to weeding out unprofitable cows and being unable, on account of the scarcity of good cows, to fully replace them until sufficient time elapses to rear young stock to take their place.

Does the foregoing table not furnish convincing proof of the advantages to be derived from cow-testing work?



Fig. 4—A Manitoba cow whose production for a year was 17,423 pounds of milk and 592 pounds of butter-fat.

TABLE III.

Comparison of the two best with the two poorest cows in a typical Manitoba herd.

Two Best Cows				Two Poorest Cows			
Age	Pounds of milk	Pounds of fat	Av. per cent. of fat	Age	Pounds of milk	Pounds of fat	Av. per cent. of fat
5	6,614	214.8	3.24	5	3,501	135.3	3.86
6	5,205	223.5	4.29	9	1,774	67.1	3.78
Aver.	5,909	219.1	3.70		2,637	101.2	3.83

There are a couple of points that the foregoing table serves to illustrate and emphasize.

One is, that in the great majority of our herds there are some reasonably good cows, while there are others that cannot be classed as dairy cows at all, but are kept at an actual loss. Were all equal to the best the herd would be a fairly profitable one.

Another point that this table brings out is, that in most herds there are a few good cows that would serve as a nucleus from which to build up a good herd, were the herd headed by a suitable, pure-bred dairy sire.

Systematic cow-testing invariably proves a great revelation, and enables us to intelligently weed out our herds and to select for breeding purposes.

Compare the two best cows with each other for milk and butter-fat production. While the one produced over 1,400 pounds more milk than did the other, yet she produced less butter-fat. The milk of a cow must be both weighed and tested.

TABLE IV.
Comparison of the calculated with the actual monthly yield of milk per cow:

No. of cow	Calculated Yield (Pounds)	Actual Yield (Pounds)	Differ'ce (Pounds)	No. of cow	Calc'lated Yield (Pounds)	Actual Yield (Pounds)	Differ'ce (Pounds)
1	485	481	4	12	375	353	22
2	180	201	21	13	520	518	2
3	720	720	0	14	379	389	10
4	905	872	33	15	550	578	28
5	1,177	1,146	31	16	680	684	4
6	360	370.	10	17	455	456	1
7	1,115	1,142	27	18	240	226	14
8	642	650	8	19	452	441	11
9	724	725	1	20	310	306	4
10	791	785	6	21	380	411	31
11	223	225	2	22	590	623	33

This table is made up from the work done with two different herds.

The **calculated** yield is the yield as estimated from weighing the milk of a cow, morning and evening, of each of three days in the month, ten days apart, just as we do in our regular cow-testing work; while the **actual** yield is obtained from weighing the milk at each milking, during the month, and totalling the weights.

It will be conceded, we think, that our method gives close enough results for all practical purposes, while at the same time it simplifies matters and saves a great deal of work.

The greater the regularity as to the times of milking, the more nearly accurate will be the results.



Fig. 5—A Manitobagrade cow with a record of 8,124 pounds of milk and 338 pounds of butter-fat for a regular milking period.

TABLE V.

Showing the necessity for **WEIGHING** a cow's milk throughout her lactation period.

Month No.	Cow No. 1	Cow No. 2	Cow No. 3	Cow No. 4
1	746	842	486	932
2	831	1,174	812	1,326
3	824	1,364	900	814
	876	967	620	409
	764	601	730	68
	722	319	775	Dry
	698	47	661	
8	590	Dry	610	
9	437		460	
10	222		440	
11	101		113	
Total	6,811	5,314	6,607	3,549

All four cows freshened during the same month, and in the table is given the monthly yield of each and her total yield for the year.

As cows Nos. 1 and 2 belonged to the same herd, and cows Nos. 3 and 4 to another herd, the two cows in each pair were under the same conditions as to care and feeding.

Judged from their records for the first few months of their milking periods, cow No. 2 would appear to be a larger producer of milk than cow No. 1, and cow No. 4 would bear a similar relation to cow No. 3; whereas, when we consider the record of each cow, in each pair, for the year the situation is entirely reversed. Nos. 1 and 3 were persistent milkers and proved profitable dairy cows, while Nos. 2 and 4 fell down as dairy cows on account of going dry early.

This table points to the necessity for a cow being a persistent milker in order to prove profitable, and shows how erroneous may be our conclusions unless we weigh a cow's milk throughout her lactation period, instead of just during a portion of it.

TABLE VI.

Showing the necessity for SAMPLING AND TESTING a cow's milk throughout her lactation period.

Month No.	Cow No. 1		Cow No. 2		Cow No. 3		Cow No. 4	
	Pounds of milk	Per cent. of fat	Pounds of milk	Per cent. of fat	Pounds of milk	Per cent. of fat	Pounds of milk	Per cent. of fat
1	546	3.4	614	3.3	426	3.5	847	3.4
2	618	3.4	704	3.2	487	3.8	946	3.3
3	622	3.5	714	3.	526	3.7	1,027	3.3
4	723	3.5	721	3.8	591	4.1	1,016	3.5
5	714	3.7	693	4.1	632	3.9	936	3.7
6	636	3.9	627	4.4	578	4.2	822	3.9
7	601	4.0	591	4.6	501	4.5	690	3.9
8	540	4.1	502	5.1	430	4.9	498	4.1
9	427	4.1	461	5.3	213	6.4	213	4.3
10	214	4.2	47	7.6				

A point brought out strongly in this table is, that although two cows may begin their lactation periods by producing milk of practically the same richness, the milk of the one may increase in richness much more rapidly than that of the other as the lactation period advances. In this respect compare, with each other, cows Nos. 1 and 2, which belonged to the same herd, and freshened during the same month. A like comparison may be made of Nos. 3 and 4, which belonged to another herd, and also freshened at practically the same time.

For this reason, and for the added reasons brought out in the foregoing table, that a cow's milk is likely to vary in richness from month to month, and is certain to increase in richness as she advances in her milking period, we should sample and test a cow's milk throughout her lactation period.

After studying Tables 5 and 6 the reader will, we think, see the great necessity there is for both weighing and testing a cow's milk, not merely for a month or two, but throughout her lactation period, in order to secure results upon which to base a judgment that is at all safe and conclusive.



Fig. 6.—A Manitobagrade cow with a record of 7,391 pounds of milk and 289 pounds of butter-fat for a regular milking period.

CONCLUDING REMARKS

The story is told of an Eastern farmer, that after carrying on cow-testing work for some two or three years he remarked, "I've been doin' this work for a long time now and the blamed old cows are no better'n when I begun."

Apparently he thought to shame the poor cows into doing better work. But unfortunately such cows have no sense of shame.

We would mention two requisites in connection with the building up of the dairy herd. The one is, to **know** the value of each cow in the herd for dairy purposes, through systematic weighing and testing; while the other is, to **utilize this knowledge** to weed out and build up the herd.

Farmers who have engaged in this line of work, and have made good use of the information gained, have had splendid success in improving their herds; and we have on file many appreciative letters received from them.

The reader who has not already begun cow-testing work is invited to correspond with the Dairy Department of the Manitoba Agricultural College regarding it, if, after a perusal of this bulletin, he feels sufficiently interested to do so. Should he **begin** the work he will, in all likelihood, meet with many **surprises** regarding the different members of his herd; and should he **continue** it, and make use of the information gained, there is no question as to the **benefits** that will follow.



The Ayrshire cow, Jean Armour (Canadian bred), whose record for 365 days is 20,174 pounds of milk and 775 pounds of butter-fat.

The World's Champion Ayrshire cow, Lily of Willowmoor, has a record, for 365 days, of 22,106 pounds of milk and 888 pounds of butter-fat.

