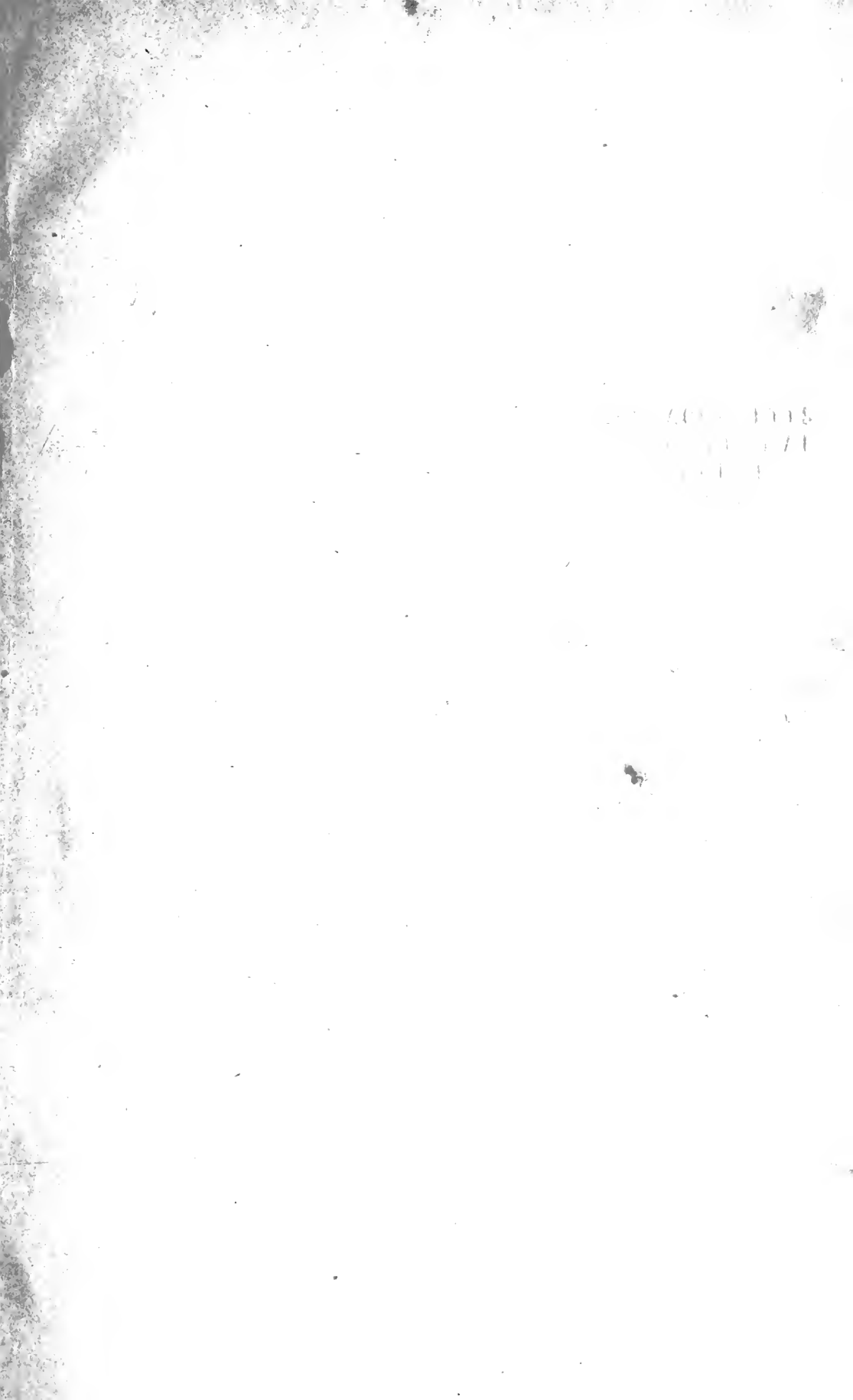


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AYRSHIRES IN SCOTLAND.

FROM BIGGLE COW BOOK. PUBLISHED BY WILMER ATKINSON CO.

Ayrshire Breeders' YEAR BOOK,

Containing the Proceedings of the

Annual Meeting for 1898,

...with a...

History of the Breed,

RECENT MILK AND BUTTER RECORDS,

...and...

General Information about Ayrshires

...and the...

Ayrshire Breeders' Association.

BRANDON, VT.:
BRANDON PUBLISHING COMPANY.
1898.

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PROCEEDINGS.

The Twenty-third Annual Meeting of the Ayrshire Breeders' Association was held January 26, 1898, in the parlor of the Fifth Avenue Hotel, New York, in response to notice of the Secretary, and was called to order by the President, L. S. Drew, at 10:45 a. m.

The President appointed Messrs. B. C. Sears and J. O. Magie Auditors to examine the accounts of Treasurer and Secretary.

There were twelve members present, as follows, and a few breeders not members :

MEMBERS PRESENT.

Brown, Obadiah	Burke, Joseph F.
Casterline, J. Andrew	Drew, L. S.
French, J. D. W.	Lindsay, William
Magie, J. O.	Sears, B. C.
Smith, Henry E.	Viner, William
Wells, S. M.	Winslow, C. M.

MEMBERS REPRESENTED BY PROXY.

Arnold, Geo. W.	Ayer, H. S.
Babcock, F. M.	Bacon, P. K.
Beach, Frederick H.	Bement, George
Betts, Henry,	Blodgett, H. W.
Blodgett, J. W.	Calumet Woolen Co.
Cass, Geo. L.	Cloud, James
Converse, J. F.	Cookingham, H. W.
Cornell, F. P.	Crozier, Wm.
Drummond, James	Fletcher, Etna J.
Foote, T. L.	Foss, J. M.
Garvin, W. R.	Gold, T. S.
Harrington, H. A.	Hayes, Charles H.
Hayes, Charles S.	Hazard, Isaac

Higgins, Asa	Holt, Andy
Hopkins, Willis W.	Hill, J. J.
Jackson, Ward R.	Jones, N. P.
Larned, J. H.	Lawrence, James
McCrea, Robert	Milliken, Charles R.
Peirce, George H.	Proctor, Fletcher D.
Reeve, C. McC.	Seaver, Henry E.
Sherman, Everett B.	Smith, Daniel A.
Smith, Oliver	Smith, Peter D.
Spalding, L. C.	Stevens, Wm. Stanford
Stewart, John	Stowell, L. D.
Surget, James	Thorp, Henry
Tschudy, Fred	Tubbs, Ambie S.
Underhill, C. S.	Wells, Dudley
Yeaton, George H.	Winter, N. H.

REPORT OF THE SECRETARY.

The membership of the Association has been increased by the addition of three new members, as follows :

James J. Hill, St. Paul, Minn.
 A. W. Hunt, Brunswick, Me.
 John R. Valentine, Bryn Maur, Pa.

Only one death has been reported, Gen. John Bratton, White Oak, S. C.

There has been an increased number of entries to Volume XII above any recent Volume at this stage of progress, and mostly from new men.

There has been the same trouble this year as last from Canada Ayrshires. New men wishing to go into the breeding of Ayrshires have gone to Canada and bought foundation stock, not knowing the condition of their Herd Books, and only found their mistake when they reached quarantine and could not get them regis-

tered in the Ayrshire Record, and had also to pay import duties on them.

Our government does not recognize the entry of Ayrshires in the Canada Herd Books as a guaranty of purity of blood, and requires that all Ayrshires brought over for breeding purposes and free of duty shall be registered in our Herd Record, and shall present a certificate of entry from our Secretary before they can be entered free of duty. The old breeders have not been caught, because it is generally known among Ayrshire breeders that some of the Canada pedigrees are defective, and they have submitted the intended purchasers to your secretary for inspection before paying for the stock or moving it from Canada, and have thus been saved much trouble and loss, for there is no redress for them after paying for the stock, as the Canadians are aware of the condition of their Herd Books, and confine all their warranty to entry in the Canada Herd Book.

There has been an unusual demand for Ayrshire literature from people desiring information in regard to the Ayrshire as a dairy breed. Also your Secretary has frequent inquiry in regard to the top cross of Ayrshire on Jersey. We have during the past two years issued a pamphlet and a leaflet giving such general information as the public demanded, which we have found of great value in disseminating knowledge of the breed among inquirers, and we would suggest the advisability of combining general information of this breed and such statistics as can be obtained and embellished with cuts of typical Ayrshires, which, united with the report of the annual meeting, would make an attractive annual, and would do much good in a general way.

The great trouble has always been to get reliable statistics of the dairy performances of Ayrshire cows.

Very few of the owners of Ayrshires keep any records, and really know but little about their cows.

What the public demand is reliable facts of what the cow can do at the pail. There is no question but

that the Ayrshire cow has great dairy capacity, but we must show what she is by actual performances, and it all depends on the owners. It is hard for your Editing Committee to "make bricks without straw." The report of the Secretary was accepted and adopted.

LETTER FROM THE A. J. C. C.

OFFICE OF THE
AMERICAN JERSEY CATTLE CLUB, }
No. 8 West Seventeenth Street. }

NEW YORK, Jan. 25, 1898.

To the President and Members of the Ayrshire Cattle Breeders' Association:

GENTLEMEN: The President of the American Jersey Cattle Club, Mr. E. A. Darling, directs me to extend the greetings of this Club to your Association, and to express our pleasure in being honored with your presence in New York City in your annual session; also to offer to your Association the courtesies and privileges of the offices of the American Jersey Cattle Club.

With best wishes for the success of your meeting, I am

Very respectfully,

J. J. HEMINGWAY, Secretary.

On motion of Mr. French, the Secretary was instructed to convey the thanks of this Association to the Jersey Cattle Club for the courtesy extended.

NEW MEMBERS.

The following names of gentlemen wishing to join the Association were presented and voted to be received and to become members upon paying the membership fee:

Chas. D. Sage, North Brookfield, Mass. Endorsed by S. M. Wells.

Edward S. Bowen, Providence, R. I. Endorsed by Obadiah Brown.

C. H. Boynton, Lisbon, N. H. Endorsed by C. M. Winslow.

O. Beebe, Hamilton, N. Y. Endorsed by C. M. Winslow.

Charles C. Doe, South Newbury, Vt. Endorsed by L. S. Drew and C. M. Winslow.

Arden Farms Dairy Co., Arden, N. Y. Endorsed by B. C. Sears.

Fisher & May, St. Albans Hill, Vt., and Potsdam, N. Y. Endorsed by L. S. Drew.

Report of the Committee on Tests at Fairs.

Your committee prepared the following circular, which which was sent to the

Maine State Fair.

New England Fair.

New Hampshire State Fair.

New Jersey State Fair.

New York State Fair.

Rhode Island State Fair.

Vermont State Fair.

Wisconsin State Fair.

SECRETARY'S OFFICE, AYRSHIRE BREEDERS' ASSOCIATION.

BRANDON, VT., March 1, 1897.

The Ayrshire Breeders' Association offers a special premium, for the season of 1897, of \$25.00—\$15.00 to first and \$10.00 to second—to the two Ayrshire cows, registered in the Ayrshire Record, that shall produce the largest amount of butter fat in one day, on your fair ground at the time of holding your Fair, the amounts to be determined by the Babcock test, and not to fall below 3.70 per cent. butter fat, due consideration being given to the quantity of milk produced and time of calving; provided, however, that your Fair Association will offer a like amount, making the whole premium offered amount to \$30.00 to first and \$20.00 to second, and that your Fair Association take the full charge of

the testing, and report the result to the Secretary of the Ayrshire Breeders' Association.

The awards will be based on the following

SCALE OF POINTS :

For each 20 days since calving,	- - - - -	1 Point.
“ “ 15 “ of gestation,	- - - - -	1 “
“ “ pound of milk,	- - - - -	1 “
“ “ “ of butter fat,	- - - - -	20 “

C. M. WINSLOW, Secretary.

The New England Fair, Maine State Fair and Vermont State Fair accepted the conditions of the offer.

The New England Fair reported six cows entered, but in the test none of them eligible to the premiums on account of falling below 3.70 per cent. butter fat.

The Maine State Fair reported two cows as entitled to first and second, but did not send the full result of the test, and you Secretary declined to accept the result of the test without full particulars, and was then informed that the judge in the ring simply entered first and second against the names of two cows without any test being made.

At the Vermont State Fair there were thirteen cows entered, eight by C. M. Winslow, four by L. S. Drew, one by Dr. C. C. Doe.

The test was made by the State Experiment Station as follows :



CLIO ROSE, 7525.

	POUNDS OF MILK.		PER CENT OF FAT.		POUNDS OF FAT.		Total Fat.	Calved.	Served.	Total points Ayrshire scale.
	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.				
* C. C. Doe—	8.6	9.14	3.50	3.18						
L. S. Drew—										
Minnehaha.....	15.10	16.5	4.68	3.70	0.731	0.603	1.334	July 4	61.7
Miss Ollie.....	7.4	6.0	6.05	5.45	0.439	0.327	0.766	Aug. 27, '96	June 12	52.6
Prinsteps	9.2	13.4	3.88	5.28	0.354	0.700	1.054	April 13	July 8	54.2
Sheba	7.6	7.14	6.10	4.10	0.450	0.323	0.773	Feb. 22	April 2	50.5
C. M. Winslow—										
Acelista.....	6.2	6.0	5.35	4.00	0.328	0.240	0.568	May 12, '96	Jan. 2	63.7
Chlo Rose.....	6.0	4.5	4.93	3.80	0.296	0.164	0.460	Aug. 18, '96	Nov. 28, '96	57.2
Lovely.....	10.6	10.2	5.35	3.45	0.555	0.349	0.904	Aug. 27	38.8
Rose Allie.....	12.0	13.14	5.18	3.80	0.622	0.527	1.149	Aug. 30	49.0
Rose Clenna.....	12.11	9.5	7.13	5.10	0.905	0.475	1.380	March 27	May 3	65.7
Rose Clovis.....	9.0	7.0	5.70	4.73	0.513	0.331	0.844	March 5	April 6	52.0
Rose Erica.....	4.0	3.14	7.90	5.75	0.316	0.223	0.539	Nov. 12, '96	Jan. 3	49.7
Rose Veritas.....	10.6	9.14	5.40	3.83	0.560	0.378	0.938	April 22	July 17	48.7

*Below in quality of milk.

- First—Rose Clenna.
- Second—Acelista.
- Third—Minnehaha.

Correct.

JOSEPH L. HILLS, Director Vermont Experiment Station.

HOME DAIRY TEST.

Your Committee issued the following circular which was sent every owner of five or more cows registered in the Ayrshire Record :

AYRSHIRE BREEDERS' ASSOCIATION.

HOME DAIRY TEST, 1897.

The officers of the Ayrshire Breeders' Association have for years felt the need of reliable statistics in regard to the dairy yield of Ayrshire cows, and have made frequent appeals to the breeders to furnish milk or butter yields of their cows for the purpose of giving information to the general public. It is beyond our comprehension that breeders and owners of the best dairy cow in America should stand in their own light and financial interest by so persistently withholding from the public all knowledge of the great dairy capacity of their cows.

The statistics we have been able to obtain indicate that there is a dairy capacity in the Ayrshire cow which should place her in the highest rank of dairy breeds. There has never been any continued systematic effort to develop either their milk or butter capacity, and yet every now and then there comes to light a cow that shows the Ayrshire to be in the foreground as a dairy cow, even though her owner has entirely neglected her. The great butter and milk producing dairy world is tired of the frail Jersey and lean Holstein, and is looking for a substantial cow like the Ayrshire—one that will give her 6,000 lbs. of milk and 300 lbs. of butter on the ordinary food and care of the farm—and it only needs a little business enterprise in the Ayrshire breeders to place the Ayrshire cow in her true position as the leading dairy cow of America.

The Home Dairy Test offers a rare opportunity for the breeders to learn which are their best cows, and also gives to the public the knowledge of the dairy capacity of this breed. Last year there were only two herds

that availed themselves of this offer of the Association to test their herds free of expense to the owners, but it is hoped there will be many more in the coming year.

RULES OF TEST.

Herds of five or more cows will be tested for the herd average and the individual records.

Any breeder of Ayrshires may enter a herd of five or more cows, which shall at the time of entry stand on the books of the Association as owned by him. He shall, in making the entry, fill out a blank furnished by the Secretary, giving name and number of each cow, her age and weight, the number of calves she has produced, the date of birth of last calf, and date of last service by bull since last calf was dropped. A statement, as accurate as possible, is requested of the method of feeding and care for at least two weeks previous to test, and during the test the kind and quantity of food consumed by the cows will be ascertained and recorded.

Tests will be made twice during the year, about six months apart. All entries must be made before June 1, 1897, to C. M. WINSLOW, Brandon, Vt., but the owner need not name the cows entered for the test until after the second test is made, and may have as many cows of his herd tested as he chooses.

The tests will be made as far as possible by agents from the Experiment Stations, or some other disinterested and competent persons, who will see the cows milked clean twelve hours previous to the beginning of the test, and will weigh and test the milk of each cow at each milking during the two days of the test. The test shall be made by the "Babcock Tester" and the "Quevenne Lactometer."

It will be expected that persons entering herds for the Home Dairy Tests will entertain the agent while making the test, free of charge, and give him every facility for carrying on the test.

C. M. WINSLOW, Sec'y, Brandon, Vt.,
 J. D. W. FRENCH, No. Andover, Mass.,
 Committee on Tests.

The following herds were entered :

A. H. Elliott, Garrattsville, N. Y.

L. D. Stowell, Black Creek, N. Y.

Charles H. Hayes & Sons, Portsmouth, N. H.

W. R. Garvin, Dover, N. H.

Geo. H. Yeaton, Dover, N. H.

Newman E. Sears, Elmwood, Conn.

C. M. Winslow, Brandon, Vt.

With the exception of Mr. Elliott and Mr. Hayes, the report is complete and satisfactory. With them the June test was made with all the cows in milk, but most of them were dry at the time of the fall test, consequently incomplete and not reported in full by the station. The result of the test of the others is as follows.

Herd of N. E. SEARS, Elmwood, Conn.

C. M. WINSLOW, Sec'y.

DEAR SIR:—I wish to enter the following herd of six cows for the "Home Dairy Test" by the Ayrshire Breeders' Association.

Name.	No.	Age.	Weight	No. of calves.	Date of birth of last calf.	Date of last bull service since calving.
Cloverine Beauty,	12802	2	680	1	Mch. 18, '97.	
Clover Bud.	12452	4	825	3	Apr. 18, '97.	
Clover Leaf,	10502	11	1045	7	July 9, '96.	Nov. 5, '96.
Clover Leaf 2d,	12681	4	925	2	Aug. 9, '96.	Dec. 4, '96.
Clover Leaf 3d,	13131	3	830	1	July 15, '96.	Dec. 1, '96.
Clover Branch,	13214	3	820	1	July 19, '96.	Oct. 17, '96.

FOOD AND CARE.

During the June test and for two weeks previous they had the run of a pasture, part upland and part lowland, near barn. They were stabled at milking time and fed the following grain ration daily:

Name.	Wheat Bran.	Corn and Oat Meal.	Corn Meal.	Cotton S. Meal.
Cloverine Beauty,	4 quarts	2 quarts		½ pint.
Clover Bud,	4 "	3 "		1½ "
Clover Leaf,				
Clover Leaf 2d,	4 "		2 quarts	
Clover Leaf 3d,	4 "		2 "	
Clover Branch,	4 "		2 "	½ "

DURING DECEMBER TEST

they were fed rowen hay and two bushels of sweet corn fodder daily, with the following grain rations:

Name.	Wheat Bran.	Gluten Meal.	Cotton S. Meal.	Corn Meal.	Linseed Meal.
Cloverine Beauty,	4 quarts	2 quarts	1 quart	1 quart	
Clover Bud,	8 "	2 "			2 quarts
Clover Leaf,	8 "	2 "	1 "	1 "	1 "
Clover Leaf 2d,	8 "	2 "		1 "	2 "
Clover Leaf 3d,	4 "	2 "	1 "	1 "	
Clover Branch,	4 "	2 "	1 "	1 "	

The June test was made on the farm at the time of taking samples. The samples for the December test were taken to the Station for finishing.

Signed,

NEWMAN E. SEARS.

Test made by Connecticut Experiment Station, Storrs, Conn.,
June 25 and 26, 1897, four consecutive milkings.

Signed, C. L. BACON.

Cow.	Milk.	Butter-fat per cent.	Lbs. of Butter-fat.	Total Solids.
Cloverine Beauty,	57.80	3.50	2.01	12.90
Clover Bud,	79.80	4.75	3.76	13.67
Clover Leaf,	14.14	4.50	.64	13.62
Clover Leaf 2d,	45.80	3.87	1.77	12.60
Clover Leaf 3d,	37.40	3.57	1.36	12.85
Clover Branch,	33.80	3.92	1.31	12.81
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	268.74	4.02	10 85	13.08

DECEMBER 12—13.

Cloverine Beauty,	39.12	3.80	1.53	12.60
Clover Bud,	25.12	4.80	1.63	14.27
Clover Leaf,	45.13	4.	1.83	12.58
Clover Leaf 2d,	55.10	3.60	2.03	12.11
Clover Leaf 3d,	44.	3.70	1.63	12.43
Clover Branch,	39.40	3.80	1.49	12.70
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	247.87	3.95	10.14	12.78

TOTAL.

Cloverine Beauty,	96.92	3.65	3.54	12.75
Clover Bud,	104.92	4.78	5.39	13.97
Clover Leaf,	59.27	4.25	2.47	13.10
Clover Leaf 2d,	100.18	3.73	3.80	12.35
Clover Leaf 3d,	81.40	3.63	2 99	12.64
Clover Branch,	73 12	3.86	2.80	12.75
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	515.81	3.98	20.99	12.93
Average,	85.97	3 98	3.50	12.93

Herd of W. R. GARVIN, Dover, N. H.

C. M. WINSLOW, Sec'y.

DEAR SIR:—I wish to enter the following herd of six cows, for
the "Home Dairy Test" by the Ayrshire Breeders' Association.

Name	No.	Age.	Weight about.	No. of calves.	Date of birth of last calf.	Date of last bull service since calving.
Bessie Wyber,	9356	12	1000	8	May 18, '97.	
Daisy B,	9380	12	"	9	June 21, '97.	
Gretta,	10984	8	"	6	April 9, '97.	
Blissa,	10982	8	"	4	Oct. 26, '96.	Feb. 28, '97
Eyrie,	12602	3	"	1	Aug. 12, '96.	Dec. 24, '96
Silvia W,	11672	8	"	6	Dec. 1, '96.	Jan. 10, '97

Summer Feed, short pasture with 4 to 6 quarts mixed feed (bran and fine feed) once each day.

Winter Feed, $\frac{3}{4}$ bushel ensilage, 3 quarts Buffalo gluten feed, 4 quarts mixed feed daily.

W. R. GARVIN.

Test by New Hampshire Experiment Station for two days each, in July, 1897 and January, 1898. January test made by C. W. Vickery.

Signed,

FRED W. MORSE, Vice-Director.

JULY TEST.

Name.	Milk.	Per cent Butter-fat.	Pounds Butter-fat.	Per cent. Total Solids-
Bessie Wyber,	92.50	3.33	3.07	11.99
Daisy B,	64.25	4.08	3.61	13.36
Gretta,	79.50	4.40	3.49	13.50
Blissa,	60.00	3.90	2.56	13.10
Eyrie,	40.50	4.25	1.72	13.55
Silvia W,	34.25	3.38	1.15	11.68
	<u>371.00</u>	<u>3.89</u>	<u>15.66</u>	<u>12.86</u>

JANUARY TEST.

Bessie Wyber,	38.90	3.30	1.28	11.95
Daisy B,	45.50	4.40	2.00	13.70
Gretta,	39.50	4.05	1.59	13.25
Blissa,	78.50	4.05	3.19	13.20
Eyrie,	33.60	3.60	1.20	12.70
Silvia W,	74.40	3.25	2.44	12.10
	<u>310.40</u>	<u>3.78</u>	<u>11.70</u>	<u>12.82</u>

TOTAL.

Bessie Wyber,	131.40	3.32	4.35	11.97
Daisy B,	109.75	4.24	5.61	13.53
Gretta,	119.00	4.21	5.08	13.37
Blissa,	133.50	3.98	5.75	13.15
Eyrie,	74.10	3.93	2.92	13.13
Silvia W,	108.65	3.32	3.59	11.89
	<u>681.40</u>	<u>3.83</u>	<u>27.30</u>	<u>12.84</u>
Average,	113.56	3.83	4.55	12.84

Herd of GEO. H. YEATON, Dover, N. H.

C. M. WINSLOW, Sec'y.

DEAR SIR:—I wish to enter the following herd of eight cows, for the Home Dairy Test by the Ayrshire Breeders' Association.

Name.	No.	Age.	Weight.	No. of Calves.	Date of birth of last calf.	Date of last bull service since calving.
Lady Fox,	9669	10	950	9	Apr. 24,'96.	Mar. 24,'97.
Annie Bert,	9670	10	900	9	June 5, '96.	
Lady Crescent,	11880	4	925	3	Nov. 12,'96.	June 12,'97.
Meewe,	11130	6	940	4	May 25,'96.	
Molly Meade,	10661	8	950	6	May 4,'96.	Sept. 1,'97.
Yucca,	11470	5	970	4	Nov. 23,'96.	Jan. 1,'97.
Phronsie,	12359	3	800	2	Jan. 7,'96.	Mar. 9,'97.
Ursuline,	12360	3	800	2	Jan. 16,'96.	" " "

FOOD AND CARE.

In summer cows pastured one mile from barn. One feed of hay and three quarts of mixed feed—two quarts each of Buffalo gluten feed and ground oats and one quart of cotton seed.

Winter feed consisted of ensilage morning and night, hay at noon, with a grain ration of four quarts of mixed feed, three quarts Buffalo gluten feed, one quart each of ground oats and cotton seed.

GEO. H. YEATON.

Tests made by the N. H. Experiment Station for two days each in June, 1897, and January, 1898.

Signed,

FRED W. MORSE, Vice-Director.

Name.	Milk.	Per cent butter-fat.	Pounds butter-fat.	Per cent Total solids.
Lady Fox,	62.20	4.48	2.78	13.20
Annie Bert,	72.50	3.92	2.84	12.80
Lady Crescent,	19.90	4.90	1.09	13.82
Meewe,	84.40	4.55	3.88	13.60
Molly Meade,	77.00	3.77	2.90	12.55
Yucca,	42.10	3.94	1.65	13.00
Phronsie,	40.00	3.90	1.56	12.87
Ursuline,	45.60	3.67	1.64	13.08
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	443.70	4.14	18.34	13.12

JANUARY TEST.

Lady Fox,	88.70	4.30	3.81	13.85
Annie Bert,	43.20	3.70	1.55	13.15
Lady Crescent,	73.70	4.05	2.98	13.45
Meewe,	62.90	4.32	2.72	13.90
Molly Meade,	27.70	3.97	1.10	13.20
Yucca,	62.90	4.05	2.54	13.40
Phronsie,	69.10	4.40	2.95	13.50
Ursuline,	83.70	3.42	2.86	12.30
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	511.90	4.03	20.51	13.34



ROSE CLENNNA, 11153.

TOTAL.

Lady Fox,	150.90	4.39	6.59	13.52
Annie Bert,	115.70	3.81	4.39	12.98
Lady Crescent,	93.60	4.48	4.07	13.63
Meewe,	147.30	4.43	6.60	13.75
Molly Méade,	104.70	3.87	4.00	12.88
Yucca,	105.00	4.00	4.19	13.20
Phronsie,	109.10	4.15	4.51	13.18
Ursuline,	129.30	3.55	4.50	12.69
	<u>955.60</u>	<u>4.09</u>	<u>38.85</u>	<u>13.23</u>
Average,	119.45	4.09	4.86	13.23

Herd of C. M. WINSLOW & SON, Brandon, Vt.

C. M. WINSLOW, Sec'y.

DEAR SIR:—I wish to enter the following herd of ten cows for the Home Dairy Test by the Ayrshire Breeders' Association.

Name.	No.	Age.	Weight.	No. of Calves.	Date of birth of last calf.	Date of last bull service since calving.
Rose Deross,	10347	6	975	4	Feb. 10,'97.	Mar. 9,'97.
Rose Electa,	10336	7	1100	5	Nov. 25,'96.	Jan. 21,'97.
Rose Cleon,	11143	5	1050	3	Oct. 27,'96.	Feb. 20,'97.
Rose Ladye,	11158	4	1000	2	Dec. 20,'96.	Jan. 25,'97.
Iola Lorne,	12773	2	1050	1	Feb. 18,'97.	Apr. 1,'97.
Rose Sultana,	12072	3	1075	2	Nov. 24,'96.	Jan. 12,'97.
Rose Erica,	12775	2	1000	1	Nov. 12,'96.	Jan. 3,'97.
Rose Veritas,	12176	3	1025	2	Apr. 22,'97.	July 17,'97.
Acelista,	12094	2	1000	1	May, '96.	Jan. 2,'97.
Lerea Douglas,	12093	2	1050	1	Nov. 24,'96.	Jan. 15,'97.

FOOD AND CARE.

In summer the run of a good pasture one and one-fourth miles from the barn, with a small night pasture near the barn. Milked in the stable and fed two quarts of spring wheat bran twice a day.

In winter all the hay they will eat clean, and eight quarts of bran, one-half quart gluten meal, one-half quart cotton seed meal, one-half quart linseed meal fed at one feed each day. Watered twice a day with cold water in the yard.

C. M. WINSLOW.

Home Dairy Test made by the Vermont Experiment Station for two days each in June, 1897, and January, 1898.

Signed,

J. L. HILLS, Director.

JUNE TEST.

Name	Milk.	Per cent butter-fat	Pounds butter-fat	Per cent Total solids.
Rose Deross,	62.75	3.89	2.44	12.83
Rose Electa,	61.75	3.55	2.19	12.16
Rose Cleon,	49.52	3.59	1.78	12.22
Rose Ladye,	42.38	3.73	1.58	12.03
Iola Lorne,	45.51	3.67	1.67	12.50
Rose Sultana,	42.51	3.53	1.50	11.70
Rose Erica,	57.26	3.86	2.21	12.80
Rose Veritas,	71.00	3.80	2.70	13.32
Acelista,	42.75	3.58	1.53	12.38
Lerea Douglas,	47.01	3.87	1.82	12.85
	<hr/>	<hr/>	<hr/>	<hr/>
	522.44	3.71	19.42	12.48

JANUARY TEST.

Rose Deross,	65.50	4.48	2.93	13.60
Rose Electa,	65.25	3.92	2.56	12.57
Rose Cleon,	67.25	3.80	2.56	12.52
Rose Ladye,	60.75	3.78	2.30	12.31
Iola Lorne,	47.50	4.60	2.19	14.63
Rose Sultana,	62.50	3.45	2.16	11.79
Rose Erica,	42.75	3.40	1.45	11.94
Rose Veritas,	19.50	4.68	.91	13.81
Acelista,	48.75	4.02	1.96	12.79
Lerea Douglas,	35.00	3.25	1.14	12.09
	<hr/>	<hr/>	<hr/>	<hr/>
	514.75	3.94	20.16	12.80

TOTAL:

Rose Deross,	128.25	4.19	5.37	13.22
Rose Electa,	127.00	3.74	4.75	12.37
Rose Cleon,	116.77	3.70	4.34	12.37
Rose Ladye,	103.13	3.76	3.88	12.17
Iola Lorne,	93.01	4.19	3.86	13.57
Rose Sultana,	105.01	3.49	3.66	11.75
Rose Erica,	100.01	3.63	3.66	12.37
Rose Veritas,	90.50	4.24	3.61	13.32
Acelista,	91.50	3.80	3.49	12.59
Lerea Douglas,	82.01	3.56	2.96	12.47
	<hr/>	<hr/>	<hr/>	<hr/>
	1037.19	3.83	39.58	12.62
Average,	104.00	3.83	3.96	12.62

BLACK CREEK, N. Y., January 22d, 1897.

MR. C. M. WINSLOW, Brandon, Vt.

DEAR SIR:—I enclose herewith the reports of the tests of five Ayrshire cows owned by Mr. L. D. Stowell of this place. The first test was made, as you will see, about July 1, 1897, by Mr. Horace Atwood of the Cornell Ex. Station. He came here, as I went to Mr. Elliott's of Garrattsville, without knowing the rules and regulations for conducting your tests. For that reason he was not supplied with the conveniences for taking lactometer readings, and therefore could not report a complete test. I have made a summary of his test on a separate sheet, in order that you may examine it more easily.

The report of the test just made by me is quite complete, I believe, and I trust that you may find the figures correct.

As you will see by Mr. Stowell's statement, his herd is receiving only ordinary care. They are in good growing and breeding condition, and have not been pushed in the least. Under such conditions we cannot expect large records. Yet I think the five reported have made good records, considering their feed. Mr. Stowell is justly endeavoring to build up a herd which will produce the largest amount economically, and which will thrive in the hand of the ordinary farmer, and from my observations I judge he is succeeding admirably.

Very truly yours,

LEROY ANDERSON,

Of Cornell University.

Herd of L. D. STOWELL, Black Creek, N. Y.

C. M. WINSLOW, Sec'y.

DEAR SIR:—I wish to enter the following herd of five cows for the Home Dairy Test by the Ayrshire Breeders' Association.

Name.	No.	Age.	Weight.	No. of Calves.	Date of birth of last calf.	Date of last bull service since calving.
Olive S.,	10795	8	950	7	Dec. 17,'96.	Feb. 25,'97.
Kathleen S.,	11850	6	850	5	Jan. 20,'97.	Feb. 26,'97.
Ethel S.,	10792	9	915	9	Mar. 11,'97.	Apr. 5,'97.
Fern S.,	12515	4	850	3	Mar. 12,'97.	Apr. 8,'97.
Cricket S.,	12525	3	840	1	Jan. 22,'97.	Mar. 15,'97.

FOOD AND CARE.

At the time of the summer test cows were fed one-half bushel of ensilage and pasturage. At the time of the winter test, one and one-half bushels of poorly eared corn ensilage, four quarts of wheat middlings and poorly cured, over-ripe clover hay. The cows tested are hardly an average of the herd, as my best cows were dry at the time of the second test. They have been watered in the yard once a day, have never been highly fed, and are simply in good, healthy breeding condition. The cows are not quite as old as indicated above, but will be during the coming spring.

L. D. STOWELL.

JUNE TEST.

Name.	Milk.	Per cent butter-fat.	Pounds butter-fat.	Per cent Total solids.
Olive S.,	55.60	3.30	1.84	
Kathleen S.,	54.10	3.50	1.91	
Ethel S.,	51.10	4.10	2.12	
Fern S.,	57.40	3.10	1.76	
Cricket S.,	42.12	4.10	1.77	
	<hr/>	<hr/>	<hr/>	<hr/>
	260.32	3.62	9.40	

JANUARY TEST.

Olive S.,	67.00	3.50	2.34	12.42
Kathleen S.,	59.10	3.50	2.06	12.98
Ethel S.,	50.14	4.30	2.20	14.48
Fern S.,	67.12	3.90	2.62	13.96
Cricket S.,	50.00	3.90	1.96	13.89
	<hr/>	<hr/>	<hr/>	<hr/>
	293.36	3.82	11.18	13.55

TOTALS.

Olive S.,	122.60	3.40	4.18	12.42
Kathleen S.,	113.20	3.50	3.97	12.98
Ethel S.,	101.24	3.80	4.32	14.48
Fern S.,	124.52	3.50	4.38	13.96
Cricket S.,	92.12	4.00	3.73	13.89
	<hr/>	<hr/>	<hr/>	<hr/>
	553.68	3.64	20.58	13.55
Average,	110.73	3.64	4.11	13.55

In reporting the above results of Home Dairy Tests and Fair Ground Tests, your Committee feel that while the responses on the part of breeders has not been as full as we desire, still there is much to encourage, and that the breeders have made somewhat of a start in the right direction.

The expense is small to the Association, and we would recommend the continuance of both Home Dairy Tests and Fair Ground Tests. Also we would suggest the advisability of one consecutive seven day test for a herd instead of spring and fall tests of two days each. Also that the report be for market butter in addition to the report usually given.

J. D. W. FRENCH,
C. M. WINSLOW.

Committee on Tests.

On motion of Mr. Sears the report of the Committee on tests was accepted and adopted.

On recommendation of the Executive Committee for the continuance of the Home Dairy Tests and Fair Ground Tests, the following discussion took place:

THE SECRETARY—The Executive Committee last evening voted to recommend the continuance of the Home Dairy and Fair Ground tests for the coming year. Nothing was said as to the general terms, but if they are continued, it is for the Association to determine in what manner and how much money shall be expended, and to elect a Committee.

MR. BROWN—Mr. Winslow and Mr. French were on a Committee to see to that. If there is no objection, I move that they be continued.

MR. FRENCH—I think the first thing should be to approve the recommendation of the Executive Committee, and to vote that the Home Dairy Tests and the Fair Ground Tests be continued on the same terms as last year, and vote upon the Committee afterwards.

MR. SEARS—In regard to that test, it seems to me from what I have known of the testing of cattle, that a two days' test at home is rather a short one, and by way of taking the sentiment of those present, I would move an amendment that the Home Dairy Tests be made for seven days. In order to expedite the matter in regard to the taking of the tests, if two should happen to be from the same State, that the owner might have a choice of the time when they should be tested, one at one time, perhaps, and one at another.

MR. WELLS—I would ask, Mr. President, if it would not be expensive for the breeders to pay the expenses of an agent from the Experiment Station to attend to this business for a week?

THE SECRETARY—The Experiment Station of New York and the Experiment Station of New Hampshire make a charge for traveling expenses of their agent, but the only expense to the owner would be the table board and lodging of the person making the test and carrying him to and from the station. If one of the cattle owners could not afford to entertain an agent, he does not deserve to be an Ayrshire breeder. The Vermont Experiment Station have always paid their own charges. It has cost the Association simply the traveling expenses from those two stations, but has cost the owner nothing. The New York Experiment Station require a seven day test, and the agent asked if they might be allowed to continue our tests to seven days, and they would do it at their own expense. In regard to the seven day test, if the test is made for seven consecutive days and the amount of butter figured out by the station, it would give us a week's butter test on cows. A week's test is of value, and if that was made at a time during the year when the owner had his cows in shape for having the test made, it seems as though we should get some statistics that would be of value in directing attention to Ayrshire cattle.

MR. WELLS—I would ask if they require two seven days' tests or only one?

THE SECRETARY—Only one.

MR. WELLS—In preference to two tests I should prefer one of seven days.

MR. FRENCH—There is no doubt but that the seven days' test is the most valuable. Two days' test is well enough to begin with, but when all the tests as a rule are made for seven days, I think we should adopt that rule. They always calculate how much butter a cow will give in a week, and certainly the expenses have been very light to the Association this last year. One thing we have lacked from the beginning is facts in relation to milk and butter, and now we are beginning to get some, and we want more, and the longer time we can get them for the better. In the beginning men weighed the milk for perhaps two milkings, and then made an average for the year; but now I think they are getting to weigh the milk every day, as they ought to do. So I think we are beginning to get results in the right direction. I should be in favor of amending the report of the Executive Committee and inserting "seven days" instead of two for the Home Dairy Test. Later on I should hope, if not this year another year, we would make this seven days fourteen days, having one test in the spring and the other in the fall. The fact is we have been lamentably deficient in statistics and facts in relation to a breed that we believe to be the best breed there is to-day. We come to meetings and elect officers and do all that sort of thing; and yet there is more value in those papers that Mr. Winslow read giving the return from those tests than anything else we shall do here to-day. There is something you can send forth to the world. There is a record of a cow. Although that only affects those individuals, in benefiting individuals it cannot help but benefit the whole breed,

and if every man would do that he would get individual benefit as well as general advantage from it. It is certainly a step in the right direction.

THE SECRETARY—I would like to inquire if Mr. French would include in his amendment a change of the report on butter-fat to figuring out of the market butter. The Experiment Stations in their reports figure out from their station herds the market butter, and if we should figure out the market butter of a cow during the week it would be more readily understood by the public than the pounds of butter-fat.

MR. FRENCH—What do you mean by “market butter?”

THE SECRETARY—The Experiment Stations take the amount of milk and the per cent. of butter-fat and add to that a certain percentage, making it market butter.

MR. SEARS—I think that marketable butter contains 85 per cent. butter-fat. I think that is adopted as a standard.

THE SECRETARY—I would like the Ayrshire reports to conform to the standard reports that are made to the public by Experiment Stations.

MR. SEARS—Well, as I made the motion, I add the amendment. There is a standard adopted by Experiment Stations of calling butter-fat a certain per cent. of market butter. They add to the butter-fat say 20 per cent. to make it market butter, and so I add the clause that the Experiment Station making the test be instructed to carry out the market butter.

THE SECRETARY—The report on my herd of the pounds of butter that my cows gave is made by the formula of the Vermont Experiment Station at 80 per cent. of butter-fat.

THE PRESIDENT—Will you put that in the form of a resolution. It is very important that we understand that perfectly.



LADY FOX, 9669.

MR. BROWN—Do I understand you propose to make two tests during the year, of a week each.

THE PRESIDENT—One test at any season of the year to suit the owner.

MR. BROWN—Would it not be better to show two tests at any season of the year.

THE PRESIDENT—Mr. French says it is quite customary, even among the Jersey people, to show what a cow has done in a week, and I think our reports ought to be on the same basis with that of other breeders.

THE PRESIDENT—Is there anything more, Mr. Winslow?

THE SECRETARY—I think there was \$200 appropriated for this purpose last year, but we used about \$50. We ought to limit the amount to be expended.

MR. WELLS—I move the same amount be provided this year.

MR. FRENCH—Was that simply for the Home Dairy Tests?

THE SECRETARY—For all tests, I think. Fair Ground and Home Dairy Tests. We spent really only one amount of \$25 at one Fair, and the traveling expense for New York amounted to about \$17.00, and there is another bill of a small amount.

MR. FRENCH—I think the \$200 provided simply for the Home Dairy Test; then we voted for a Fair Ground Test wherever a Society would duplicate it—we would offer \$25.00. There was no limit to that I think, because we felt perfectly safe; we should not be called upon for any unnecessary expense.

THE SECRETARY—With the permission of the President, I will read the motion of '97.

HOME DAIRY TEST FOR 1897.

“On motion of Dr. C. S. Barney it was voted that the Dairy Committee of last year, consisting of C. M. Winslow and J. D. W. French, be reappointed for the coming year, and be commissioned to continue the

Home Dairy Test on the same general plan of last year, except that the herd may consist of five or more cows, instead of ten as last year. Also, that they be commissioned to continue the Special Fair Prize the same as last year, and that not to exceed \$200 be appropriated from the funds of the Treasury to meet the expense of the work."

MR. BROWN—That includes the whole, then.

THE PRESIDENT—What will you do, gentlemen?

MR. SEARS—My motion was the report of the Executive Committee on Home Dairy Tests:

RESOLVED—That the Dairy Tests be made for a period of seven consecutive full days of 24 hours each and at such time as the owner of the cows may choose, he to notify the Secretary of such date, and that the Station having charge of the test be requested to report not only the total amount of butter-fat, but also the amount of marketable butter, stating the percentage of fat such butter would contain.

MR. FRENCH—I move that the report of the Executive Committee as amended by Mr. Sears be adopted.

Motion seconded and carried.

MR. FRENCH—Now, I move that the appropriation be made \$300. If we have any money in the treasury, I think we cannot expend it more wisely than to put it into these tests.

MR. WELLS—To cover all expenses?

MR. FRENCH—No, to expend the \$300 for the Fair Ground and Home Dairy Tests, and that the expenditure be left in the hands of the Committee that may be appointed.

MR. SEARS—I was going to move that we provide \$300 for the Home Dairy Tests. We have an economic Committee; would it not be well to allow them to go as high as \$500? Suppose some Fair should spurt up.

MR. BROWN—I understand you added \$100 more

than last year. It seems to me that ought to be sufficient.

MR. SEARS—I do not want the Committee to be hampered.

THE SECRETARY—Your Committee last year, in sending to the Fairs, sent out very cautiously, beginning early, so as not to exceed the appropriation; but as one Fair after another failed to respond or declined to accept terms, we sent to another Fair, until we got quite a ways around. There is an advantage in sending to more of the Fairs at the same time. I do not think there is very much expectation that many Fairs will put up an equal amount. Last year only three Societies agreed to do it, and two of those fell short. Our terms of qualifying limited it, therefore if they failed to yield 3.7 butter-fat they are not eligible, and the Fair Ground putting up \$25.00 against the Association's \$25.00 cuts off a good many. I had a good many letters from Fair Associations asking what our terms were, but when they found they had to put up money to balance ours, we heard no more from them.

MR. SEARS—I withdraw my motion to increase the appropriation to \$500.

THE PRESIDENT—It has been moved that we appropriate \$300 for the expenses of the Home Dairy and Fair Ground Tests, gentlemen.

Motion seconded and carried.

MR. BROWN—I nominate Mr. French and Mr. Winslow as that Committee.

Motion seconded and carried.

Expert Judges at Fairs:

THE SECRETARY—Last year the Association authorized the Executive Committee to draw up a list of Expert Judges to be available for Fairs. This last year all through the west there was great complaint that there were no Ayrshire Judges in the ring, for the Ayrshire

cattle, and that they had to be judged by experts of other breeds. Will the Association instruct the Executive Committee to revise this list, drop it, or continue it. It seems well that we should present to the public a list of Experts.

MR. BROWN—What was the trouble in the West. Were there no Ayrshire breeders there?

THE SECRETARY—I sent to every Fair throughout the United States an approved list of Expert Judges. There were names of Western Judges on the list.

MR. CASTERLINE—I would like to say a few words on this subject. I find that many of our Fair Associations failed to avail themselves of this matter of Expert Judges. It has always been my opinion that a man who has bred Ayrshire cattle was the man to judge Ayrshires. I note an instance in Trenton a few years ago. Mr. Brown was called there, but instead of having Ayrshires to judge he was placed entirely outside of that breed and a man who was a breeder of Holsteins was the judge in the Ayrshire department. The consequence was that the Ayrshires were judged by the Holstein standard. If Mr. Brown had judged the Ayrshires, I think some of the decisions would have been reversed. As it was, I do not think justice was done. This has been a point that I have urged on some of our Fair Associations—this very matter of choosing Ayrshire breeders for Ayrshire Judges, and I think this Association ought to emphasize that very point, that those who have enterprise enough to take their stock to Fairs ought to find expert Ayrshire men to judge Ayrshire cattle.

MR. SEARS—I think there is some room for missionary work in Mr. Casterline's own State in that respect. I think it is the desire of all Ayrshire breeders that some one who is an Ayrshire breeder should judge the Ayrshire.

MR. BROWN—I think it would have good effect.

MR. FRENCH—I move that the Executive Committee have authority to prepare a list of Expert Judges. Then you can take the present list, or amend it, as you like.

Motion seconded and carried.

MR. BROWN—I suggest that Mr. Winslow make a note at the head of the list to the Fair Associations.

THE SECRETARY—To what effect?

MR. SEARS—That the Executive Committee of the Ayrshire Breeders' Association request that Fair Associations get Ayrshire breeders to judge Ayrshire cattle.

Expert Judges.

It is the opinion of the Ayrshire Breeders' Association that the men selected by the Agricultural Fair Associations throughout the country to judge Ayrshire cattle in the ring, should be men acquainted with Ayrshire cattle, and men familiar with the scale of points and characteristics of the breed.

The Executive Committee have selected the following names of men in different parts of the country whom we believe to be experts in judging Ayrshire cattle, and would recommend them to Fair Associations as judges:

Alonzo Libby, Westbrook, Maine.
 Charles H. Hayes, Portsmouth, N. H.
 George H. Yeaton, Dover, N. H.
 W. R. Garvin, Dover, N. H.
 L. S. Drew, Burlington, Vt.
 F. W. Spalding, Poultney, Vt.
 H. R. C. Watson, Brandon, Vt.
 C. M. Winslow, Brandon, Vt.
 J. D. W. French, No. Andover, Mass.
 Obadiah Brown, Providence, R. I.
 Henry E. Smith, Enfield, R. I.
 H. S. Joslin, Mohegan, R. I.
 Dudley Wells, Wethersfield, Conn.
 S. M. Wells, Wethersfield, Conn.
 J. H. Larned, Putnam, Conn.
 B. C. Sears, Blooming Grove, N. Y.
 George Taber, East Aurora, N. Y.
 A. S. Tubbs, Mexico, N. Y.
 C. S. Barney, Milford, N. Y.
 Frank Converse, Woodville, N. Y.
 J. D. Magie, Elizabeth, N. J.
 William Lindsay, Elizabeth, N. J.
 B. Luther Shimer, Bethlehem, Pa.
 J. P. Beatty, Pataskala, Ohio.
 John Stuart, Elburn, Ill.
 C. S. Plumb, Lafayette, Ind.

TREASURER'S

HENRY E. SMITH, IN ACCOUNT WITH THE

1897		
Jan. 1.	Deposit in Citizens' Savings Bank, Providence, R. I.....	\$1,852 86
" 1.	Deposit in Smithfield Savings Bank, Green- ville, R. I.....	571 50
" 1.	Cash in Treasurer's hands.....	173 34
	Sales of Herd-books.....	39 25
1898		
Jan. 1.	Interest on deposit in Citizens' Savings Bank, Providence, R. I.....	\$74 82
	Interest on deposit in Smithfield Savings Bank, Greenville, R. I.....	28 89
1897		
	Entries and transfers as per Secretary's acc't..	\$854 50
	Three membership fees " " " ..	75 00
		<hr/>
		\$3,670 16

This report and the accompanying vouchers were carefully examined and all found to be correct.

January 26, 1898.

BENJ. C. SEARS,
J. O. MAGIE.

REPORT.

AYRSHIRE BREEDERS' ASSOCIATION.

1897		
Jan. 21.	Expenses to Annual Meeting in Albany.....	\$16 72
Oct. 2.	Expressage on Herd books from Albany.....	5 45
	Postage.....	1 51
1898		
Jan. 20.	Paid Argus Co.'s bill for printing and binding,	312 00
1897	As per Secretary's account—	
	Bill for paper	3 70
	“ expressage.....	80
	“ telegrams	80
	“ account book.....	1 00
	“ postage	50 25
	Bill Brandon Union Co , for printing.....	79 32
	“ Dr. Twitchell, for lecture.....	44 45
	“ New York Experiment Station.....	9 81
	“ “ “ “	13 12
	“ Vermont State Fair Test.....	25 00
	“ traveling expenses C. M. Winslow.....	21 08
	“ salary C. M. Winslow.....	400 00
	Balance on hand.....	\$2,685 15
		<hr/>
		\$3,670 16
1898		
Jan. 24.	Deposit in Citizens' Savings Bank, Providence, R. I.....	\$1,927 68
	• Deposit in Smithfield Savings Bank, Green- ville, R. I.....	600 39
	Cash in Treasurer's hands.....	157 08
		<hr/>
		\$2,685 15

H. E. SMITH,

Treasurer.

Your committee appointed to audit the Treasurer's and Secretary's accounts found the same correct, except that the Treasurer had made an apparent mistake of one cent, which proved to be a mere clerical error. They also have gone over the cash account of the Secretary for the year 1897, as far as time would allow, and believe that the Secretary has remitted to the Treasurer 73 cents more than was due the Association. They have also examined the pass-books of the Citizens' Savings Bank of Providence, R. I., and Smithfield Bank, and find the Association credited for the amounts reported by the Treasurer, and have endorsed the Treasurer's report as correct.

BENJ. C. SEARS,
J. O. MAGIE.

NOTE.—Last year's report gave an item of money paid to Vermont Station man for work which should have been clearly stated as to the man individually, and not in any way connected with a charge by the station, as they charged nothing for their station work, but this was a gratuity to the young man.

SECRETARY.

ELECTION OF OFFICERS.

The election of officers resulted in the following choice:

President—L. S. Drew, Burlington, Vt.

Vice-Presidents—Obadiah Brown, Providence, R. I., H. R. C. Watson, Brandon, Vt., B. C. Sears, Blooming Grove, N. Y., John Stewart, Elburn, Ill.

Secretary and Editor—C. M. Winslow, Brandon, Vt.

Treasurer—Henry E. Smith, Enfield, R. I.

Executive Committee for three years—S. M. Wells, Wethersfield, Conn., J. O. Magie, Elizabeth, N. J.

Editing Committee—C. M. Winslow, Brandon, Vt., J. D. W. French, North Andover, Mass.



LADY CRESCENT, 11880.

Constitutional Regulation.

On recommendation of the Executive Committee the following resolution was introduced by Mr. Sears, and voted to be added to the Regulations of the Association :

Resolved, That an individual membership shall be continued after the death of a member in the settlement of his estate until the same shall be settled and then the membership shall cease. That in case of corporations, the corporation may continue as a member so long as they are interested in the Association, and shall be represented by such person as may be designated by the President and Secretary.

THE SECRETARY—I would like to make a motion that the entries for Vol. 12 of the Herd Book close October 1st, 1898, and that the Herd Book be issued as soon thereafter as possible.

Motion seconded and carried.

MR. WELLS—I would like to inquire of the Secretary if there are a large number of cattle over two years of age that have not been recorded in our record.

THE SECRETARY—I think that the two year limit has made the breeders record all their stock up very close. Occasionally a man will let an animal go by, but not usually.

Annual Meeting.

It was unanimously voted the next annual meeting be held in New York, at some time during the month of January, 1899.

Lectures to be Discontinued.

After a general expression of views in regard to the custom of having a lecture given before the Association at its annual meeting, it was, on motion of Mr. French, voted to discontinue them in the future.

Salary of Secretary.

On motion of Mr. French it was voted that the salary of the Secretary be the same as last year.

Ayrshire Literature.

THE SECRETARY—Your Secretary has many calls from the public generally, wanting to know about Ayrshires, and last year your Editing Committee prepared a pamphlet, with the names of members of the Association, constitution, history of the breed, general information, scale of points, etc., and sent it broadcast. Also a leaflet, not mentioning names, or any of the owners of cattle, but simply giving the test of a few cows of the best records, with cuts of what cows we could obtain, and scattered that, and it is the opinion of your Secretary that it did a great deal of good; that it directed the attention of the public to the breed of Ayrshires; and it is the opinion of your Secretary that it would be wise to issue this present coming year another small pamphlet containing the best records we can find, a general history of the breed, names of the members of the Association, and any information that is of value to have scattered, and that this be sent to all inquirers and be as generally distributed as possible. The Guernsey breeders issue an annual report of this kind, embellished with cuts, and it seems to be of considerable value to the breed.

THE PRESIDENT—I would say, gentlemen, that I think it would be a grand-good thing, because I have been having inquiries about Ayrshires, etc., and instead of writing I just send one of these pamphlets along.

THE SECRETARY—I think an expenditure of \$50.00 would issue a very nice report. I do not know but what we might include our annual report in the same book and save something.

MR. FRENCH—What did the Annual report cost.

THE SECRETARY—I have not the bill here. It is in the hands of the Treasurer, but I believe it was about \$60.00.

MR. FRENCH—I propose a motion something like this:—That the Editing Committee be authorized to publish the proceedings of this meeting and such other matters of interest as may seem of benefit to the breeders.

THE SECRETARY—I think an attractive pamphlet does more good than a cheap arrangement.

MR. FRENCH—I do not think a poor thing is of much value.

THE PRESIDENT—I should think it would be a grand-good thing, from what I know about it.

MR. FRENCH—I would say as a member of the Editing Committee, if that resolution be adopted, that if at any time the breeders would send us such pictures as could be used, we should be glad to use them. We are in want of such things all the time. What we need to begin with is a good photograph, a card picture of the animal. A great many photographs are sent us, but few of them are good. That is—they do not represent the animal as an animal should be represented that is going out into the country as a sample of our breed. We can take these and have them half-toned and make very attractive pictures. We want pictures of animals, and we want facts to accompany them. If the breeders would give the Editing Committee material, it is all we want. Give us the material and there is no trouble about getting up an attractive book at a comparatively small price. But we cannot make bricks without straw.

THE SECRETARY—I would like to suggest to the breeders that they must use judgment in the pose of the animals. A good many pictures sent us are taken with the head nearest the camera, and you get a very large head and small hind quarters, but if a little judgment were exercised by the artist and by the

owner, a picture that we could use could be obtained. The business end of an Ayrshire cow is the rear, and the camera should be so placed that the side view would at the same time have the rear of the animal nearer the camera.

Motion seconded and carried.

On motion the meeting adjourned at 1:15, to meet again at two o'clock, to listen to the paper by Prof. L. L. Van Slyke.

The Association was called to order at 2:30 p. m. by President Drew, who introduced Prof. L. L. Van Slyke of the New York Experiment Station, who read a paper on

SOME OF THE SOLVED AND UNSOLVED PROBLEMS OF DAIRYING.

AN ADDRESS GIVEN BEFORE THE AYRSHIRE BREEDERS' ASSOCIATION AT THE FIFTH AVENUE HOTEL, NEW YORK CITY, JANUARY 26TH, 1898, BY L. L. VAN SLYKE, PH.D., CHEMIST OF THE NEW YORK AGRICULTURAL EXPERIMENT STATION, GENEVA, N. Y.

It has been my custom, when addressing a body of men like yours, to present the results of some special research work, confined to some limited portion of the field of dairying. It occurred to me, however, that for this occasion, it might be more desirable to depart somewhat from my usual custom and to take with you a rather general survey, covering what has already been accomplished in the various lines of dairying and making prominent that which remains to be done, before we come nearer our ideals.

We will, as it were, take an inventory of our stock of knowledge of dairy science and practice, and thus ascertain in what lines we need to fill up, in order to make our stock more complete. It is helpful and often

encouraging to find out just what we really do know and what we actually don't know. The line of division between these two territories is often uncertain, and varies much in the sight of different individuals. Each year adds materially to the realm of known things. At no time in the history of the world has there ever been so great activity in all lines that relate to the science and practice of dairying as during the past few years.

I will speak first of that branch of dairying of which I have least knowledge experimentally, but which is fundamental in its importance—and in which you are more especially interested,—I mean breeding.

BREEDING.

Generally speaking, I suppose it is safe to say that in no line of dairying has the best practice advanced in the past half century so little as in that of breeding, for the reason that no other line had been so much developed previously. It would be untrue to say that our knowledge of the science of breeding has not advanced, for we know much more now about the *whys* of breeding than we once did; but this knowledge has served rather to explain why successful breeders secured good results than to work any revolutions in those methods. I do not mean to be understood as saying that no more dairy-men are using better methods than formerly, but that there has been no great revolution of successful methods, giving greater success than the best methods previously employed.

Again, I suppose it is safe to say, if I may judge from what I have heard in conversation with different individuals, that in no line connected with dairying, is there such variation of opinion in regard to the details of successful methods. Very much still lies in the border land between the known and the unknown. There are a great many half-truths, which are taken for complete truth. We know that it is easily possible to control the character of offspring and to direct it along certain lines

that are suited to certain more or less special purposes. We also know that we have not yet complete control of all conditions and we can not be sure of definite success until we do.

In addition to these very general statements, I wish in passing to call attention to a possibility of future breeding, as pointed out by President Jordan, of Leland Stanford University in an address given before the California Dairymen's Association. I quote from a report of his paper: "The egg of a cow," he said, "is essentially like the egg of a hen, as all eggs are merely cells. The nucleus of the cell contains the architect's plan for the whole animal. Now, if the nucleus of a cow's egg could be taken out and substituted for the nucleus of a hen's egg within the latter egg, there would be no difficulty, with proper means of development, in hatching cows from hen's eggs." The report says that this sublime proposition called forth loud applause and visions of untold wealth at once arose before the eyes of the astonished dealers in milk and cream. Several immediately began figuring out what increase they might expect in their herds from their present stock of chickens. On an ordinary farm having 200 chickens, which average one egg a day, a collection of five days would aggregate 1000 hen's eggs. Then the cows' eggs could be transferred to the hens' eggs and a sufficient number of hens selected to cover these eggs. At the end of three weeks, these faithful hens would have hatched out 1000 calves, which at \$3 each, would represent a profit of \$3000. The dairymen were dazed at the greatness of the scheme, but were called down from their high flights by President Jordan's remarking: "I do not think this will lead at once to a revolution of the industry, but there is no theoretical difficulty in the way, and fully as wonderful things have been done."

It would thus appear that we have much yet to look forward to in the line of future changes in methods of breeding.

The control of sex has probably attracted more attention than any one point in breeding. While many claims have been put forward from time to time that the problem had been worked out, these have all been disappointing when carefully and extensively tested. Within the past few weeks a German asserts that he has succeeded and, while carefully avoiding details, he states in a general way that sex is governed by the character of food eaten by the mother during the period of gestation. This precise claim has been made before. This is at present an unsolved problem and no one can tell how long it may remain so.

FOODS AND FEEDING.

Great advance has been made during the last generation in regard to our knowledge of food, its uses, functions and adaptations. We know that foods perform certain functions in the animal body; that they furnish the material necessary to repair the losses sustained by waste of tissues; that they supply material for new growth; that they give the fuel needed to maintain the animal body at a temperature suited to its working requirements; that they furnish the body strength or power to do work; that they enable their nutritive parts to circulate through every portion of the body and thus supply to each what is needed. I say that we *know* these things. Once they were wholly unknown but now are solved problems.

We also know that a food, such as corn-meal for example, is a mixture of several kinds of compounds known as *nutrients*. Thus, corn-meal contains some water, some protein or nitrogenous compounds, some carbohydrates, some fat or oil, and some mineral constituents represented by the ash. We also know to some, but not the full, extent, what use is made of each kind of nutrient. For example, we know that the special duty of protein, under which term are included several different compounds, all containing nitrogen combined

with other elements is to repair waste tissues and to grow new ones, such as muscles, nerves, tendons, skin, hair, etc.; also, in the cow, to furnish the material out of which are made the casein and albumin of milk. Protein also furnishes some heat and working power.

Carbohydrates include sugar, starch, gums, fiber, etc. Their special purpose or work is to furnish heat and working power, and also more or less material for the production of fat. The fat or oil of foods can be used to furnish heat and also material for building fatty tissues.

The use of water is to render the fluids of the body sufficiently diluted to circulate with ease, and to form a portion of all organs and parts. The water in foods and animals, though held in the tissues in such a way as to be invisible, is just like the water drawn from a well and performs the same functions in the animal body.

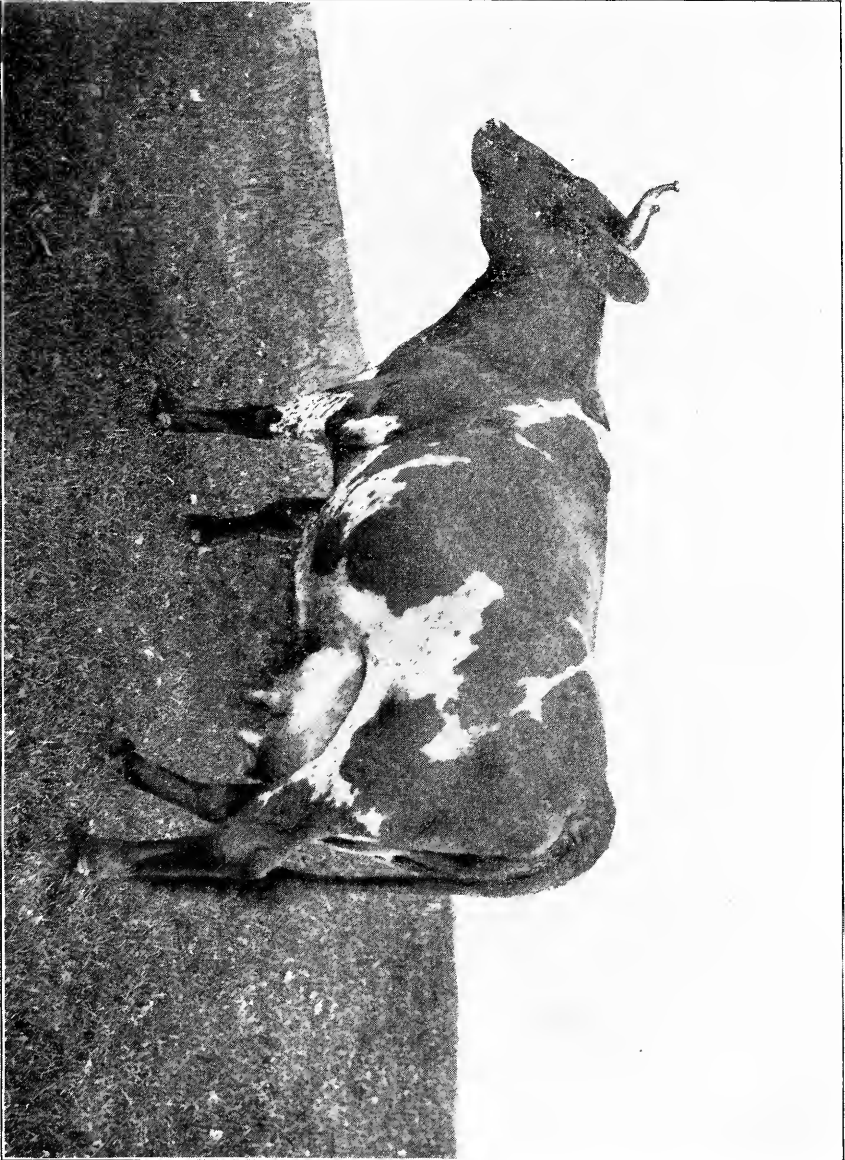
The ash is largely used in making bone.

These general facts are among the solved problems pertaining to the composition and functions of foods.

Now, what are some of the unsolved problems in this field?

One such problem of high interest and importance in dairying concerns the source of formation of milk-fat. Where does milk-fat come from?

The most common popular belief is that milk-fat comes from the fat present in food eaten, and that the animal simply collects and transfers the food-fat into body-fat or milk-fat. This belief has had some foundation. In some exceptional cases it has been possible to account for all milk-fat by the food-fat. In some cases it has been possible to change the composition of the milk-fat by changing the kind of food-fat. Thus, it is commonly held that cotton seed meal makes a harder butter, changing the composition of the milk-fat; on the other hand, that linseed meal so changes the composition of milk-fat that it produces a softer butter.



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We are not yet justified by facts in accepting these statements without some qualification. The conditions under which such effects have been obtained require further study. Again, it has been thought the transformation of food-fat to milk-fat is the most natural. We must remember that the same kind of food eaten by different animals furnishes animal fats which differ very essentially, as lard, tallow, mutton, milk-fat, etc.

It has been claimed that milk-fat is formed from the protein of food. It is conceivable that it might be, but experiments upon which such a belief is founded were carried on with other animals than the cow, and had little or no reference to milk-fat. In my judgment there are no experimental data which justify us in believing that the milk-fat necessarily, under normal conditions, comes from protein. Such a belief has had the effect of making some feed highly nitrogenous rations.

There is unquestioned proof that milk-fat is formed from starch and sugar foods, or carbohydrates.

Director Jordan of the Geneva Station has recently been carrying on an experimental study, bearing on this particular question—the source of milk-fat. A ration from which the fat had been nearly all removed was fed a cow 95 days, and her milk continued similar to that produced when she was fed on the same kinds of hay and grain in their normal condition. During the 95 days, the milk contained 62.9 lbs. of fat. The food eaten during this time contained only 11.6 lbs., of which only 5.7 lbs. were digested, hence not less than 57.2 lbs. of the milk-fat came from some other source than the food-fat. It might be suggested that this milk-fat came from fat previously stored in the body. Three lines of evidence show that this could not have been the case. (1st.) The cow's body could have contained scarcely 60 pounds of fat at the beginning of the experiment. (2d.) She gained in body weight 47 pounds with no increase of body nitrogen, and was judged to be a fatter

cow at the end. (3d.) The formation of this quantity of milk-fat from body-fat would have caused a marked degree of thinness in body.

The milk-fat could not have come from protein, because there was not enough protein taken in food to produce more than 17 pounds of fat, allowing that all the fat possible came from protein. The quantity of milk solids bore no definite relation to the digestible protein eaten or decomposed in the body.

The composition of the milk bore no definite relation to the amount and kind of food.

The only possible conclusion from this carefully conducted investigation is that the milk-fat came, at least, in large part from the carbohydrates. In view of these facts, it may be supposed that the well-known favorable effect upon milk secretion of a narrow nutritive ratio is due in part to a stimulative, and not wholly to a constructive function of protein.

Another problem, closely related to the foregoing, which still remains a source of contention, is in regard to controlling the per cent. of fat in milk, particularly with reference to increasing it. While the results of investigation have varied somewhat, we must confess that, so far as our present knowledge goes, we know of no authoritative experimental evidence which would justify us in saying that the per cent. of fat in milk can be increased under normal conditions and in an economical, practicable way by any change in the character or amount of food nutrients. The investigation already referred to did not reveal any marked changes in composition of milk even when very marked changes were made in the character and composition of food. And yet there is probably no belief which is more tenaciously held by milk producers. Of course no one can now say with positiveness whether this problem is one that admits of possible solution. We have not yet solved it.

Among other problems, partially solved at least, connected with the feeding of dairy animals is the one relating to mixing of food nutrients. We know that we can secure desired results most economically by feeding protein, carbohydrates, etc., in proportions that are approximately definite. To say that we know exactly what those proportions are is claiming more than we know with positiveness. We know roughly and should work within limits not too wide apart. To say that we must always have our food mixture or ration contain exactly 5.4 parts of carbohydrates, etc., for one part of protein is claiming too much. We know that there may be quite wide variations from this standard with equally good results or better. It is highly desirable, it is the only way, to feed according to definite principles, but our application must not be too narrow. I am free to say that I regard it as a species of humbug for any one to make one ration for a Jersey cow, another for an Ayrshire cow and still another for a Guernsey, when the object is in each case to produce milk-fat. The use of a feeding standard must always be accompanied by common sense observation of the individual animals we are working with, if we expect to secure most economical results. The tendency has been too much in the direction of regarding a fixed, definite standard, universal in its application, as a solved problem.

To a layman, it may be a matter of surprise to learn that chemical methods for determining the actual food constituents of our feeding materials are very far from complete. It is commonly thought that a chemist can tell everything imaginable about a food after making an analysis, but it is as yet an "iridescent dream." For example—we have yet no satisfactory method for determining the amount of fat or oil in a food. What we report as fat or ether-extract is very impure fat. Then, of the different compounds embraced under the term protein, we have a kind of separation in albuminoid and

amide compounds, but it is desirable to go farther than this, which we cannot well do. The determination of starch, sugar, etc., is still a matter of study and experiment, though much progress has been made within five years past. What can be done now is most helpful, but it suggests how much more there remains to do in this important field.

Ten years ago it was thought that a method had been found by which we could determine closely the digestibility of the nutrients of a food. Artificial digestion became a "fad," but the method in many details was found to be unreliable and its results very variable in the hands of different workers. It was found that a great variety of conditions affects the digestibility of a food, so that actual digestion and artificial digestion often give results wide apart. There has also been not a little difficulty caused by actual digestion experiments improperly carried out or by drawing sweeping conclusions from the use of two or three animals.

We have reason to feel greatly encouraged by the marked progress made in the methods of study of all that pertains to food and feeding, but we must not make the mistake of closing our eyes to the fact that very much remains to be learned before we can say that there are no unsolved problems in this field.

MILK SECRETIONS.

There is probably no operation taking place within the cow that possesses for the dairyman more intense interest than that of milk secretion. How does the cow make milk? The question has been studied from its chemical, physiological and histological standpoints. The chief characteristic of the results of study thus far made has been the finding out of things that are not so. Each investigator has shown that the theory held by his predecessor was incorrect and has set up his own theory, which in turn was knocked down to be replaced by

another. About no function have there been so many different theories as about that of milk secretion.

Time forbids any detailed consideration of this important subject. I can simply make a few statements by way of a summary of what is not yet known. Originally it was held that milk is simply blood filtered through the mammary gland, and that, therefore, the amount and quality was determined solely by the amount and quality of food. As a matter of fact, not one of the organic constituents of milk occurs ready formed in the blood, but they are all formed in the milk gland.

Each gland or half of the udder is composed of a quantity of structures known as lobes, gland-lobules and alveoli. These may be compared to a bunch of grapes; the lobe represents the bunch, the gland-lobule a single grape; and the alveoli, smaller glands within the single berry. Now these gland-lobules containing the alveoli, that is, the single grape with its contents, are the chief center of the physiological action which gives rise to the secretion of milk. This fact has an important practical bearing, because the amount and quality of the milk secretion depends mostly upon the number of gland-lobules present in the udder, and the number and course of the visicles distributing the blood-stream through the milk-organ. The difference in the milking qualities of different cows is principally due, therefore, to the inherited individual characteristics.

We do not yet know at all clearly what takes place in the udder in the formation of milk. We do not know to what extent the constituents of the blood, the fat, the protein compounds, the carbohydrates, as well as the lymph bodies and the substance forming the epithelial cells of the alveoli of the glands are utilized in the formation of the organic constituents of milk. Even less do we know the changes that take place in the materials which are converted into the constituents of milk.

The question as to whether the milk lies in a ready-formed condition in the udder, or whether a part is formed through the excitation of the nerves connected with the milk-secreting organs during milking, in consequence of the withdrawal of pressure in the udder, must be regarded as still unsettled.

Taking up next what we know and don't know about milk and its products, we can congratulate ourselves that we know much more than our fathers did, and are making rapid additions to our knowledge each year; and yet enough remains to keep a lot of chemists employed for many years to come.

It was not many decades ago that the knowledge of the composition of milk was limited to this: Men were led, from common observation, to believe that milk contained three constituents: First—fat, which separated as cream and could be made into butter; second—curd, formed by the souring of milk; and, third—whey or serum, the thin liquid portion left after coagulating the curd. We have improved and extended our knowledge beyond the foregoing facts. We know that milk is made up of numerous compounds, some of which are very complete in composition.

The constituent of milk which is present in largest quantity is water. This may vary from below 85 to 89 pounds for one hundred pounds of milk. The average is not far from 87 1-3 pounds. I might say at this point that the water present in milk, butter, cheese, etc. is no different from water we find in nature elsewhere. We know that the amount of water in milk is influenced by various conditions, such as breed, individuality, stage of lactation, kind and quality of food, health, care, etc. While we can, to a limited extent, control the amount of water in milk, we are very far from doing so completely. For example, we cannot, by normal means, make a cow born to give rich milk produce poor

milk, that is, milk containing much water. And I have yet to learn that the reverse operation has been accomplished.

It was formerly supposed that milk-fat was a simple compound, but we now know that it is a very complex mixture, containing glycerine united with a half-dozen or more acids, combinations—some of which are peculiar to milk-fat. This much we think we know about the composition of milk-fat. But we know little as yet about the details of how this mixture of compounds contained in milk-fat is put together. Much work has been done on this problem. Its solution is of practical importance, because the knowledge may aid further in the solution of the problem of how to control the composition of milk-fat.

We know that milk-fat varies more than any solid constituent in milk, varying not only in the milk of different cows, but in that of the same cow. Taking individual animals, we find milk-fat going as low as 2 1-2 per cent. and as high as 8 per cent. normally. The average can be placed somewhere between the limits of 3 3-4 and 4 per cent.

The last few years have added very much to our knowledge regarding the relation of milk-fat to the products—butter and cheese.

The amount of fat in milk enables us to tell, within narrow limits, how much butter should be made from any given quantity of milk.

It has been demonstrated that for each pound of fat in milk, we should make about one and one-eighth lbs. of butter, or one pound two ounces. To find out how much butter should be made from 100 pounds of milk, we simply multiply the per cent. of fat in the milk by 11.8. For example, from 100 pounds of milk containing 3 per cent. of fat, we should make about 3 pounds 6 ounces of butter; from 100 pounds of milk containing 4 per cent. of fat, 4 1-2 pounds of butter, etc.

Suppose now, in making butter, we get more or less than the calculated yield, how shall we explain this? If less than the calculated amount of butter is made, the decrease must be due to one or both of two causes: First—excessive loss of fat in skim-milk and butter-milk; and, second—the working or pressing out of too much water. If more butter is made than the rule calls for, then it is due to the fact that more than average amount of moisture has been left in the butter, caused by unfavorable conditions of ripening cream, or of churning, or by insufficient working. These facts enable the butter-maker to find out whether he is making mistakes in his work, and whether he is getting the best results in butter yield. This fact enables us to find a satisfactory basis in paying for milk at creameries. The amount of butter that can be made from milk depends primarily upon the amount of fat in milk. It is milk-fat, not milk, that makes butter. Hence, milk-fat should be the basis of paying for milk at creameries. This is a most important problem solved.

Again, much the same principle applies to cheese as to butter, so far as concerns the relation of milk-fat to cheese-yield. While cheese-yield is not absolutely in proportion to milk-fat, yet the variation is confined within such narrow limits that the milk-fat basis is beyond all question incomparably fair in paying for milk for cheese-making, as against the method of paying for weight of milk only.

These facts place before the dairyman another definite problem, which each must work out for himself. He is furnished with a working basis such as he has never had before. The problem before each dairyman who produces milk for butter or cheese, and who labors for the highest success is this: How to produce, not quantity of milk alone, but increased quantity of milk-fat. Hence the problem to be solved is the production of fairly rich milk, if large money returns are to



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be secured. It costs less as a rule to produce a pound of fat in milk containing 4 to 5 per cent. of fat than it does a pound of fat in milk containing 3 per cent of fat. It is important to keep in mind that it is not alone richness of fat that we must have, but also quantity of milk-fat. The problem then is so to control the milk-yield and richness of fat that we shall get the largest amount of milk-fat most economically. The solution of this problem is not impossible of accomplishment on the part of every dairyman. The cows that can accomplish this result must be obtained by a wise combination of breeding, feeding, care, etc. We have a definite basis upon which to build, a definite problem to solve, and the means at hand for effecting its solution. The solution of other problems has made the importance of this one manifest, and has also made the task readily possible.

In this connection I want to throw in a word about the extreme importance of keeping up the flow of milk. This can be done to best advantage only by a wise use of succulent foods, There is a special field for application in seasons of drought. Such serious shrinkage occurs in milk yield in dry spells, in case of cows at pasture, that very serious loss is sustained often. Provision should be made regularly in this climate to supplement dried pastures, for we usually have dry spells at some time or other during the season. For this purpose nothing is better than corn silage, alfalfa, or some other green fodder like oats and peas. Keeping up the milk-flow means keeping up the yield of fat.

Another class or group of important compounds present in milk is known under the general term of nitrogen compounds. Formerly it was supposed that there was only one of these compounds in milk, and it was called casein. It is still a common mistake to speak of all the nitrogen compounds of milk as casein. While casein is the most abundant of these compounds in milk,

there are, at least, two others in addition, known as albumin and albumose. Casein is that portion of the milk which coagulates or solidifies when milk sours, or when rennet is added. Albumin is like white of egg, it is not coagulated by rennet or by acids, but is by heat. The other nitrogen compound of milk, albumose, is not coagulated at all by ordinary means. In 100 pounds of milk, we find from less than two to over five pounds of casein; from about 1-3 to 2-3 pound of albumin and somewhat less albumose. Casein is not only the most abundant but it is also the most important of the nitrogen compounds of milk. The fact that casein is coagulated by rennet lies at the basis of the whole industry of cheese-making. It may seem strange, but it is, nevertheless true, that the composition of casein is still an unsolved problem. It cannot be said with certainty whether it is a single compound or a mixture containing two or more compounds. Exactly in what manner rennet and acids affect casein when they coagulate it, we are not sure. One chemist's life devoted to a study of this single substance would be considered as most successful, if a satisfactory solution of these unsettled problems could be reached.

The question has been raised whether we could not hold in cheese all the nitrogen compounds of milk and so increase considerably the yield of cheese. It would be possible, but not practicable, to retain albumin in cheese, but the albumose would get away into the whey in spite of us.

From the foregoing superficial and hasty review, it will be seen that, however much has been accomplished in advancing our knowledge of the composition of milk, very much lies ahead in the realm of the unknown.

Similarly our knowledge of the composition of butter and cheese has very greatly increased, even in the last five years, but we are far from having learned everything.

In regard to the detailed chemical changes that occur when cheese undergoes the remarkable transformations known as ripening, we know something, but only the A B C as yet. Within the past year has come a fundamental discovery in this field. It has been universally believed that the breaking down of casein in cheese ripening was due to the action of lactic acid germs. This breaking down consists of a change from the rubber-like, indigestible curd to a soft, mellow and digestible condition. This action is now believed to be due to the presence of ferments or enzymes which form a part of the milk. These enzymes are known as unorganized ferments like rennet, as distinct from germ ferments. Drs. Babcock and Russell are engaged in studying this problem. These enzymes exist in different quantities in different milks, and are probably influenced by a variety of conditions which remain yet to be learned.

We believe that we know pretty thoroughly the relation that exists between the composition of milk and the composition of cheese, so fully, indeed, that from knowing one we can approximate the other. We know, for certain, that skim-milk can not make cheese of the same composition or value possessed by that made from normal milk.

One of the most important, if not the most important, problems that has recently realized a complete solution is a method of determining the amount of fat in milk. For years dairy chemists had been seeking to devise simple means for solving this problem. It remained for Dr. Babcock to find the best solution. This has placed in the reach of every dairyman the means of finding out his mistake; it has made possible for every dairyman the independent study of dairy problems; it renders the dairyman capable of acting in his own defense; it gives a working basis, a guide, and a final arbiter of success. It makes possible the solution of problems whose solution would otherwise be impossible.

A few years ago dairy chemists were confronted by a most serious problem, that of detecting imitation butter. The problem was solved, and the successful execution of laws looking to protection against imitation butters has depended upon its solution.

More recently the problem of distinguishing skim-milk from whole milk, and skim-milk cheese and filled cheese from whole milk cheese has been solved.

When your Association began its existence, the word "bacteria" was unknown to any but a few scientists; its use in connection with practical dairying was not even dreamed of then. Many problems which lay before dairymen could be solved only through the instrumentality of these minute beings. Through study of these "germs," as we commonly call them, we have solved the problem of how to prevent or delay the souring of milk and cream, of ripening cream for butter-making, so as to secure a uniform flavor; of ripening milk for cheese-making; of preventing bad flavors in butter and cheese. There are other problems in this line yet to solve. For example, we want a way to sterilize milk without in any manner changing its chemical or physical characteristics; we need a method of sterilizing condensed milk, which will give us a long-keeping product in all climates; we want to overcome the various diseases to which milk and its products are liable; we want to control the flavor of cheese so completely that we can produce any desired flavor at will. We want cures or preventives for all germ diseases to which our cows are subject.

Many problems have been solved in this generation in the mechanics of dairying. The cream separator has revolutionized our old methods; and it would seem as if we could hope for little more in this line, except a cheapening of these machines to such an extent that no dairyman can afford to be without one.

I might continue indefinitely, recounting the triumphs of deeds accomplished and the hopes of achiev-

ments yet to be wrought in the realm of dairy science and practice. But enough typical illustrations have been drawn from the various fields of dairying to show that we have reason to feel encouraged that so much has been accomplished in so little time; and that we can go forward confident of achieving even greater triumphs in solving the problems which we must at present class as unsolved.

After the lecture, there were quite a number of questions asked Prof. Van Slyke, on points in his lecture.

On motion of the Secretary a vote of thanks was given by the Association for the interesting and instructive lecture.

Adjourned.

Association Transfers.

The result of the hearing before the Executive Committee in relation to the transfer of the Maple Knoll Herd of Ayrshire cattle, was, that while there seemed to be no valid reason why the cattle should not be transferred, it was deemed inexpedient at this stage of the proceedings to establish so unusual a precedent, and the whole matter was placed in the hands of the Secretary, to try in some way to effect an amicable settlement, the result of which was that after the meeting, the Secretary visited the different parties who were in the city and the whole matter was settled pleasantly and satisfactorily, without the intervention of the Association.

C. M. WINSLOW, Sec'y.

THE AYRSHIRE BREED.

J. D. W. FRENCH.

The County of Ayr, Scotland, is divided into three districts—Carrick, Kyle and Cunningham. An old stanza says:

“Carrick for a man,
Kyle for a coo,
Cunningham for butter and cheese,
And Galway for woo.”

The ploughman poet Burns when occupying a farm near Dumfries, is said to have kept Ayrshire cows, and to have highly appreciated their good qualities.

Among the distinguished breeders in Scotland have been the Duke of Buccleuch, the Duke of Athol and the Marquis of Bute, but the breeding of Ayrshires has not been confined to the nobility, for there have been a host of noted breeders among the common farmers.

Previous to the year 1780, Ayrshire cattle are generally spoken of as unshapely and inferior in quality, but soon after that date a great improvement began to take place which has been going on ever since, until the Ayrshire of today stands well at the head of all British breeds for vigor of constitution and general adaptation for the dairy.

The origin of the Ayrshire breed is still somewhat in the dark; but it is generally admitted that the first decided improvements began soon after the introduction

of some foreign breed—whether the Teeswater, the Dutch or the Alderney has never been settled beyond question. There is record of an importation to America in 1822, but as early as 1837 importations of this breed were made into Massachusetts by J. P. Cushing of Wattertown, and the Massachusetts Society for the promotion of Agriculture, and these have been followed by many others. In 1840, the Hon. Daniel Webster, after a trip abroad, said: “I have been greatly pleased with Scotch farming, and as the climate and soil of Scotland more resembles the climate and soil of Massachusetts than those of England do, I hope the farmers of Massachusetts will acquaint themselves as well as they can with Scotch husbandry. I think quite well of the Ayrshire cows. They are good milkers, and being a hardy race, are on that account well suited to a cold climate, and to the coarse and somewhat scanty pasturage of New England.” Ayrshires were kept on his farm at Marshfield.

The words of Webster are quoted mainly to emphasize the importance in selecting a breed of cattle, of paying some regard to the soil, climate and environments of the breed in its native land.

Ayrshire milk has all the qualities which constitute good milk, the butter and casein being in good proportion, well adapted for human food, and, as shown by experience, especially so for children.

Professor Sheldon, author of “Dairy Farming,” says of the Ayrshires: “They are wonderful milkers, doing well in milk where most other breeds would hardly live—more completely than most, if not all other breeds, they possess the property of converting into milk the elements of food. They are hardy enough to stand severe climates, while they have the faculty of quickly adapting themselves to altered conditions.” He then proceeds to divide the breed into two classes—the one representing the butter and the other the cheese type—

the milk of the first having butter globules scarcely inferior to the Jersey—though varying more in size.

The truth of this is evident from the record of such cows as “Duchess of Smithfield,” with a yield in seven days of 463 3-4 lbs. of milk, producing 19 lbs. 6 oz. of butter; “Kitty Douglas,” with 15 lbs. 2 oz.; “Bessie Bell 3d,” with 15 lbs. 4 oz., and “Tempie,” with 15 lbs. 6 oz. a week.

At the Vermont Experiment Station in 1895, Rena Myrtle, 9530 A. R., a farrow cow, gave the largest milk and butter record ever obtained at the Station from a cow of any breed in one year—12,175 pounds of milk, producing 546 pounds of butter.

At the New Hampshire Experiment Station, with four cows of each breed, the average results for a full year’s test was as follows:

	<i>Ayrshire.</i>	<i>Jersey.</i>	<i>Holstein.</i>
Pounds of milk,.....	5.845	4,847	5,971
Pounds of butter,.....	267	269½	207
Per cent. of butter-fat,.....	4.28	5.12	3 15
Cost of keeping,.....	\$44.48	\$46.49	\$50.12
Pounds of milk to pounds of butter,	21½	18	29

I have on record 11 cows with more than 400 lbs. butter in the year to their credit.

Roxanna, 1816 A. R., a cow weighing scarcely 1000 lbs., in 14 years gave 81,323 lbs., or 40.66 tons of milk, each year yielding in milk more than five times her own weight. The milk in this case was carefully weighed twice each day. There is also a long list of cows yielding 10,000 lbs. of milk or over in twelve months.

The average production of cheese in Scotland is from 500 to 600 lbs. per cow.

It is then in the power of the farmer to breed the butter or cheese type, as he may select, and with the aid of the Babcock test, he can do this without the actual manufacture of either article of food.

If bred closely to the butter type for a few years, the Ayrshire cow will become a formidable rival of the



LADY ESSEX 3d, 3595.

Channel Island breeds, as is evident from the record of individual cows at the present time.

In summing up, the Ayrshire cow is noted for its vigor, hardihood and for producing a maximum quantity of good milk from a minimum quantity of food.

The wedge shape and the large well-developed udder gives the ideal form of a dairy cow. Her average weight is about 1000 pounds.

The first Herd-Book was published in 1863. The publication of a Herd-Book by the Ayrshire Breeders' Association began in 1876, and has been continued to the present time—11 volumes in all.



PROMOTION, 4088.

The Ayrshire Bull as a Top-Cross on Jerseys.

C. M. WINSLOW.

Frequent inquiry is made your Secretary in regard to the top-cross on Jerseys and what thoroughbred is the best for the purpose of strengthening the constitution of the Jersey and making her a more profitable dairy cow for the common farmer. The judicious crossing of different thoroughbreds is a nice point in breeding, and requires a good deal of theoretical knowledge, united with actual practice, for all breeds do not nick well when crossed one with the other.

That the Jersey needs some cross of strong blood seems to be the general opinion of her owners, and various experiments have been made with bulls of various breeds, but so far as I am able to learn no cross gives such satisfactory results as the Ayrshire bull on the Jersey cow.

The most public trial of crossing on the Jerseys has been that on the farm of the late Theodore Havemyer with the Normandy. I have never seen the result, but it would seem contrary to all natural law and not likely to produce stock excelling in any point. The Normandy is a large, coarse, ungainly animal, with ill-shaped udder, thick milk, and as far as I have known is a small milker, and would not seem to have any desirable points to give the Jersey, except size, and the difference in size is too great for a first cross, for it is an acknowledged fact that variation by crossing must be done by a slow

and gradual series of crosses. The Holstein has been tried, but there are objections to this breed, both from the disparagement in size and lack of constitution and hardiness in the Holstein.

The Ayrshire seems to possess, in an eminent degree, all the points lacking in the Jersey, and to be of about the right size to nick well with the Jersey to produce a cross of symmetrical shape.

The two breeds compared are about as follows: The Ayrshire a little larger than the Jersey, of stronger constitution, a better feeder and not so dainty in appetite. Both are strictly dairy breeds, and when the average yield of dairy product is compared, cow for cow, the Ayrshire gives about the same quantity of butter in considerably more milk, and, when reckoned on a money basis, the Ayrshire is found to yield the larger return in dollars.

There are probably more individual Jerseys that have established records of butter than of Ayrshires, because the Jersey breeders have for years been testing their cows, while the testing of Ayrshire cows for butter is of very recent date, and only a few breeders have done so.

There have been a few crosses made of Ayrshire bulls on Jersey cows, and so far the result has proved satisfactory in producing a fair-sized dairy cow of strong constitution and large dairy capacity.

It is claimed by some of those who have tried the cross that they give as rich milk as the Jerseys, and in an increased quantity, and by all, so far as heard from, that they get larger returns than from the full-blood Jersey.

THE AYRSHIRE COW.

The Milkman and Villagers' Family Cow.

C. M. WINSLOW.

I frequently receive letters, from men who write that they are running a milk-route, and have Jerseys, but are not satisfied with the quantity they give, nor the constitution of the cows, and wish to inquire about the Ayrshire as a milk producer, saying they would like a larger quantity but must have good milk.

The State laws in regard to the required total solids in milk sold are such that it requires a very good cow to produce milk that is up to the required standard. The competition, too, is so sharp and the area from which milk may be transported is so extensive, that the successful producer of milk needs a cow especially adapted to the business, and it is our opinion that the Ayrshire cow possesses more of the traits desirable in a milkman's cow, than the native, or any of the thoroughbred cattle.

The Ayrshire originated in the county of Ayr, in Scotland, but whether by judicious breeding and enlisting the native stock of the country, or by the introduction of the blood of other sections and breeds, we are not clearly informed. It is true, however, that from whatever source she may have originated, she comes to us with an inherited constitution and dairy capacity that eminently fits her to endure the climatic changes of

New England, and produce a large quantity of good milk at the least possible cost.

The Ayrshire cow is of medium size, weighing on an average about one thousands pounds. She has a small bony head, large full eyes, large nostrils and a capacious mouth, with a broad muzzle. Small upright horns, a long slim neck, thin shoulders, large barrel, broad long hips, heavy hind quarters, giving her the appearance of being wedge shape, small bony legs, rather short, long slim tail, and in color usually red and white—spotted or slashed. Sometimes she is found nearly all red and sometimes nearly white. She has a large square udder, laying well up under the belly, and extending well out behind, with teats of medium length spread wide apart, large milk-veins and large milk-holes, giving a decided appearance of a remarkable dairy cow. She is quick and active, eats voraciously and walks rapidly, and is hardly ever at rest, being always busy either eating or chewing the cud.

The writer has often watched them when on the road going to and from the pasture, chewing as they walked, and even continuing when started into a run, the main desire of an Ayrshire cow seeming to be to keep up her reputation for a large quantity of milk.

She is not at all dainty in her food, taking freely whatever is offered her, and scarcely stopping to see whether it is of good or bad quality. She is so hungry and has such a good appetite that everything seems to taste good. She is quiet and pleasant, and not easily disturbed by noise or commotion in the stable, seeming not to care whether she is milked by the same person always, or by a stranger. She is bright and intelligent and is easily taught to take the same place in the stable, and readily adapts herself to a new place if desired.

She is a persistent milker, giving a large flow up to nearly time for calving, and unless care is exercised will not readily dry off.

An average Ayrshire cow should give on fair keeping about 3000 quarts of milk in a year, but there are herds whose average yield is over 3500 quarts, and many individual records of from 4000 to 6000 quarts in the year.

The quality of the Ayrshire milk, particularly adapts her for the milk-man, as it will bear transportation without churning, and does not readily sour.

The milk has a good color, and when poured back and forth from one can to another a few times, will then retain the cream in distribution for a long time, making it a good milk to peddle, because each customer receives uniform quality. Also a desirable table milk, because it looks rich and is of good color until the last is used, never looking blue and lean.

The equal distribution of cream and casein makes it a perfect food, easily digested and healthy, good for children and persons with weak digestive organs.

Where it has been tried for children it has been found most efficacious in producing a strong, healthy growth, with rarely any of the derangements of stomach and bowels incident to children.

Official tests of Ayrshire cows and herds have shown her to give milk of a high quality of butter-fat and total solids, making her give milk that will bear inspection.

The herd of Geo. H. Yeaton, Dover, N. H., tested for the Home Dairy Test by the New Hampshire Experiment Station, gave a yield for ten cows, for two days in June and two days in December of 1257 lbs. of milk, nearly 51 lbs. of butter-fat, with a percentage of 4.12 butter-fat, and 13.04 total solids.

The herd of C. M. Winslow, Brandon, Vt., tested by the Vermont State Experimental Station, gave for ten cows in the Home Dairy Test, 1046 lbs of milk, 42 lbs butter-fat, with a percentage of 4.12 butter-fat, and 12.89 total solids.

The report of the Vermont Experiment Station for 1895-6 says: "It is again shown that the Ayrshire cow is more successful as a milk-maker than as a butter-producer." Their herd consists of 34 Jerseys and 3 Ayrshire cows. Acme, an Ayrshire cow, produced 8183 lbs. of milk in the year at a cost of 58.3 cents per 100 lbs., or about 1 cent a quart, being the lowest cost of any of the herd. She also produced 386 pounds of butter.

The Station asserted that there were seven Jerseys that made a larger quantity of butter than Acme, but five of them were farrow, while Acme bred regularly. While the five stood above her this year as farrow cows, last year they stood below her as breeding cows. The two Jerseys that stood above her this year on a par as breeding cows gave respectively 391 and 406 lbs. of butter. In milk, they gave 5399 and 6387 lbs.

The Station says that the skim-milk is not credited to a cow as offset in computing the cost of her butter. They also state that by former experiments skim-milk is worth 18 cents per 100 lbs. for making pork. They also say their butter sold for 23 cents per lb. Now, figuring the extra milk of the Ayrshire cow over the average of the two Jerseys at 18 cents would make Acme give \$4.12 more skim-milk, and figuring the extra butter of the two Jerseys at 23 cents would make \$2.87, leaving a balance of \$1.25 in favor of the Ayrshire cow.

In regard to the other five Jerseys that as farrow cows this year stood above Acme, and last year as breeders stood below, little need be said as to which is the more profitable cow, or should be given precedence in point of actual money value as a butter-producer on the farm; and in reckoning the cost of food to produce a given return of dairy product in a breeding cow, no account is made of the food that goes to form the calf, while in the farrow cow it may all go to the dairy production.

I have received the following comparison between the twelve best Jersey cows of the Vermont Experiment

Station and the twelve best Ayrshire cows from the herd of Mr. Drew of Burlington, Vt.

EXPERIMENT STATION JERSEYS.

Average of 12 best cows, 6377 lbs. of milk, 361 lbs. of butter.

L. S. DREW'S AYRSHIRES.

Average of 12 best cows, 7515 lbs. of milk, 355 lbs. of butter.

At the Vermont State Fair last fall the average of the 12 Ayrshire cows in the butter-fat test was 4.99 per cent.

Although the Ayrshire cow has usually been considered as strictly a milk-producing cow, and although her friends have never put her forward as a special butter-producer, yet recent tests of her butter quality, both official and private, seem to indicate that she might, with good reason, aspire to the position of a most profitable butter cow, as well as the most profitable milk cow of any of the dairy breeds, especially when her hardy constitution, easy keeping quality and large dairy production are taken into consideration.

Before the advent of the separator, there was an objection to the Ayrshire cow as a butter-producer, because the separation of cream was slow, taking thirty-six to forty-eight hours to obtain a complete separation, and her large quantity of milk made it cumbersome, and the two taken together made it necessary for the butter-maker to have large accommodations to produce the same quantity cow for cow.

It is a settled fact that the separator takes the cream from the milk of one breed as easily and thoroughly as another, which removes the only objection to the Ayrshire cow as a butter cow, and allows her to compete on a par with others in actual quantity of butter produced, and in economy of production. These changed conditions have led the friends of the Ayrshire cow to test

her butter qualities; and while the majority of the owners of Ayrshire cows make no tests, and know nothing of the individual merits of their herds, a few are taking pains to learn the quality of their cows. The following are tests that have come to my knowledge of performances during the past year:

Lady Fox has given 624 lbs. of butter during the past year as determined by the Babcock test from periodical tests during the year. She was kept farrow for a while, and the above was for the best 365 days of her milking period. Her yield of milk was 12,299 lbs.

Rose Erica, a heifer not quite two years old when dropping her first calf, has given for the first 365 days of her milking 8864 lbs. of milk and 504 lbs. of butter. The percentage of butter-fat was 4.74, as determined by three composite samples taken and made by an agent from the State Experiment Station in December, 1896, June and September, 1897.

Rose Deross gave 9333 lbs. of milk and 491 lbs. of butter.

Rose Electa, 10,207 lbs. of milk and 467 lbs. of butter.

At the Vermont Experiment Station Rena Myrtle gave 12,172 lbs. of milk and 546 lbs. of butter.

Judging from the above, it would seem as though a little care in selection and breeding would in a very short time place the Ayrshire cow in the front as a butter-producer. It shows there is an inherent butter capacity in the Ayrshire that is simply wonderful, for nothing has ever been done to develop the butter trait, and still, when placed side by side with the butter-bred cow, she equals if not excels her on her own ground.

Ayrshire Milk Records.

The following are the yields of milk that have been reported for 9,000 lbs. and over for 365 consecutive days.

Name.	No. A. R.	Pounds of Milk.
Olah,	11471	9020
Roxie,	4498	9191
Xoa,	11469	9232
Rose Deruth,	10346	9253
Lady Teazle,	6579	9268
Rose Alta,	9529	9307
Rose Deross,	10347	9333
Betty Lightfoot,	7498	9394
Yucca,	11470	9496
Annie Bert,	9670	9613
Belle Temple,	3353	9624
Roxanea 5th,	4606	9671
Queen of Ayr,	1776	9775
Island Belle,	1292	9982
Ethel Douglas 2d,	2342	10066
Rose Electa,	10336	10207
Ruth,	4816	10219
Rose Eola,	8510	10323
Queen of Ayr 4th,	4465	10426
Duchess of Smithfield,	4256	10748
Queen of Ayr 5th,	4466	10801
Ellen,	8324	10823
Queen Mary,	6578	11154
Myra,	2955	11908
Manton Queen 4th,	6100	12162
Rena Myrtle,	9530	12172
Lady Fox,	9669	12299
Alice Douglas,	4398	12617

Ayrshire Butter Records.

The following butter records for a week, month and year are mostly private records, but from what is known of the conditions surrounding the test are believed to be substantially correct.

There is a long list of records of over 300 lbs., but we have given only those reported as 400 or over.

Name.	No.	Butter.
Quess 2d,.....	3120	14.6 in seven days.
Bessie Belle 3d,.....	4323	15.4 " "
Tempie,	3263	15.6 " "
Juniper 4th,.....	4578	17.11 " "
Duchess of Smithfield,....	4256	19.6 " "
Rose Cleon,	11143	49.8 in Jan., 1897.
Rose Electa,	10336	57.8 " "
Rose Sultana,.....	12072	64.0 " "
Rose Ladye,	11158	78.4 " "
Queen Selga,.....	9545	404 in one year.
Rose Veritas,.....	12076	404 " "
Olah,	11471	412 " "
Rose Sultana,.....	12072	413 " "
Annie Bert,.....	9670	417 " "
Printsteps 2d,	8410	418 " "
Mexic,	11131	419 " "
Rose Alta,	9529	420 " "
Xoa,.....	11469	423 " "
Ruth,.....	4816	425 " "
Meewe,.....	11130	431 " "
Clio Rose,.....	7525	441 " "
Yucca,	11470	444 " "
Lovely,.....	9596	448 " "
Rose Clenna,.....	11153	454 " "
Rose Ladye,	11158	463 " "
Rose Electa,	10336	467 " "
Rose Deross,.....	10347	491 " "
Rose Erica,.....	12775	504 " "
Rena Myrtle,.....	9530	546 " "
Lady Fox,.....	9669	624 " "

CONSTITUTION.

PREAMBLE.

We, the undersigned, breeders of Ayrshire Cattle, recognizing the importance of a trustworthy Herd Book that shall be accepted as a final authority in all questions of Pedigree, and desiring to secure the co-operation of all who feel an interest in preserving the purity of this stock, do hereby agree to form an Association for the publication of a Herd Book, and for such other purposes as may be conducive to the interests of Breeders, and adopt the following Constitution :

ARTICLE I.

This Association shall be called The Association of Ayrshire Breeders.

ARTICLE II.

The members of the Association shall comprise only the original signers of this Constitution, and such other persons as may be admitted, as hereafter provided.

ARTICLE III.

The officers of the Association shall consist of a President, four Vice-Presidents, a Treasurer, a Secretary, who, together with six members of the Association, all chosen by ballot, shall constitute an Executive Committee.

The President, Vice-Presidents, Treasurer and Secretary shall be elected annually.

The six members who make up the balance of the Executive Committee shall be elected as follows: Two members for one year; two members for two years, and two members for three years, and hereafter two members shall be elected each year, for a term of three years.

The Treasurer shall present at the annual meeting of the Association a full statement of his accounts, audited by two members of the Association, appointed by the Executive Committee.

The Executive Committee shall, under the general direction of the Association, prescribe the manner in which the business of the Association shall be conducted; shall have general control of all matters pertaining to its interests; shall have authority to appoint an Editor of the Herd Book, and may fill any vacancies occurring among the officers. The office of Secretary, Treasurer and Editor may be filled by the same person.

The Treasurer, Secretary and Editor shall receive compensation for their services, to be fixed by the Association. The Treasurer shall give such bonds as may be required by the Executive Committee.

ARTICLE IV.

The annual meeting of the Association shall be held each year, at such time and place as shall be designated by the Executive Committee (of which notice shall be sent to members at least one month previous), for the discussion of questions of interest to the members, and for the election of officers for the ensuing year.

At all meetings of the Association members may vote in person, or by proxy, or they may send their ballot by mail to the Secretary, whose duty it shall be to vote the same and to acknowledge their receipt. At least twenty members present, represented by proxy, or written ballot, shall be a quorum for transacting business.

ARTICLE V.

Only Breeders of Ayrshire Cattle shall be eligible for membership, and members shall be elected at any regular meeting of the Association; also by the unanimous written consent of the Executive Committee at any time between the annual meetings, subject to the following conditions:

Each applicant for membership shall be recommended by one or more members of the Association, as a trustworthy and careful breeder; and no new member shall be admitted if objected to by any officer of the Association.

The Secretary shall notify the candidate of his rejection, or in case of his election that he will be admitted as a member on signing the Constitution and paying the initiation fee.

An applicant who has been rejected shall not be voted on again until two years from the date of his rejection, unless by the unanimous consent of the officers of the Association.

ARTICLE VI.

Each member shall pay an initiation fee of twenty-five dollars. These fees shall constitute an Association Fund to defray the expenses of publishing the Herd Book, and other charges incidental to the organization of the Association and to the transaction of its business.

No officer or member shall be authorized to contract any debt in the name of the Association.

ARTICLE VII.

The Herd Book shall be edited by an Editor appointed for that purpose, under the control and supervision of the Executive Committee, and shall be published only with its official approval.

The charge for entry of the Pedigree of each animal belonging to a member of the Association shall be

fixed by the Executive Committee, but shall not exceed one dollar, except for an animal two years old.

Animals not belonging to members of the Association may be entered in the Herd Book upon the payment of twice the amount charged to members.

The Herd Book charges shall be appropriated to the examination and verification of Pedigrees, and the preparation of the Herd Book, which shall be published by the Association and shall be its property. The price of the Herd Book shall be determined by the Executive Committee. The Editor shall keep on file all documents constituting his authority for Pedigrees, and shall hold them subject to the inspection of any member of the Association, and shall deliver them to his successor in office.

ARTICLE VIII.

Should it occur at any time that any member of the Association shall be charged with willful misrepresentation in regard to any animal, or with any other act derogatory to the standing of the Association, the Executive Committee shall examine into the matter; and if shall find there is foundation for such a charge, the offending member may be expelled by a vote of two-thirds of the members of the Association, present or represented at any regular meeting.

ARTICLE IX.

This Constitution may be altered or amended by a vote of two-thirds of the members present or represented by proxy, at any meeting of the Association.

Notice of proposed alterations or amendments shall be given in the call for said meeting.

REGULATIONS.

1. Only such animals shall be admitted to the Herd Book as are proved to be either imported from Scotland or descended from such imported animals.

2. All animals hereafter imported, to be eligible to registry in the Ayrshire Record, must previously be recorded in the Ayrshire Herd Book of Scotland, and an application for registry must be accompanied by a certificate of registry duly signed by the Secretary in Scotland.

Entries of calves imported in dam must be accompanied by the certificate of registry of sire and dam in the Scotch Herd Book, also certificate of bull service, signed by owner of bull.

3. No animal not already named and entered in some Herd Book at this date, shall be accepted for entry under a name that has already been offered for entry; also, the affix, 1st, 2d and 3d, shall apply only to calves of the cow bearing the name used; not to her grandchildren, nor any other animal.

4. The breeder of an animal shall be considered the one owning the dam at the time of her service by the bull.

5. No Pedigree will be received for entry from anyone except the breeder of the animal offered, unless it is accompanied by a certificate of the breeder, or his legal representative, indorsing the Pedigree.

Entries of calves, sired by bulls not owned by the breeder of the calf, shall be accompanied by a certificate of bull service signed by owner of bull.

6. All animals sold, in order that their progeny may be registered, must have their successive transfers duly recorded. Records of transfers will be made only on the certificate of former owner, or his legal representative.

7. A transfer-book shall be kept by the Editor, in which all changes of ownership shall be recorded.

8. The Editor shall keep a record of the deaths of all animals which may be sent to him. (And breeders are requested to forward the same, stating cause, etc.)

9. The fees for recording are one dollar for each animal recorded by and in the name of a member of the Association, being either bred or owned by him, and two dollars for animals over two years old at the time of entry.

Double the above rates are charged to those not members.

A fee of twenty-five cents will be charged for recording ancestors necessary to complete a pedigree to importation or to cattle already in the Ayrshire Record.

Transfer fee twenty-five cents. All the above fees should accompany the entry or transfer papers to insure attention.

10. These Regulations may be altered, amended or added to, with the consent of two-thirds of the officers of the Association and Executive Committee.

CHARTER.

An Act to Incorporate the Ayrshire Breeders' Association.

It is hereby enacted by the General Assembly of the State of Vermont :

SECTION 1. J. D. W. French, James F. Converse, Alonzo Libby, F. H. Mason, Obadiah Brown, Henry E. Smith, C. M. Winslow, S. M. Wells, H. R. C. Watson, James Scott, George A. Fletcher, Charles H. Hayes, John Stewart, their associates and successors, are constituted a body corporate by the name of the "Ayrshire Breeders' Association," and by that name may sue and be sued; may acquire by gift or purchase, hold and convey real and personal estate, necessary for the purpose of this corporation, not to exceed twenty-five thousand dollars; may have a common seal and alter the same at pleasure.

SEC. 2. The object of this corporation shall be to publish a herd book, and for such other purposes as may be conducive to the interest of breeders of Ayrshire Cattle.

SEC. 3. This corporation may elect officers and make such by-laws, rules and regulations for the management of its business as may be necessary, not inconsistent with the laws of this State.

SEC. 4. This corporation may hold its meetings at such time and place as the corporation may appoint.

SEC. 5. This act shall take effect from its passage-

JOSIAH GROUT,

Speaker of the House of Representatives.

LEVI K. FULLER,

President of the Senate.

Approved November 23, 1886.

EBENEZER J. ORMSBEE,

Governor.

(A true copy.)

Attest: E. W. J. HAWKINS,

Engrossing Clerk.

Scale of Points of Ayrshire Bull.

(ADOPTED FEBRUARY 21, 1889.)

The points desirable in the female are generally so in the male, but must, of course, be attended with that masculine character which is inseparable from a strong and vigorous constitution. Even a certain degree of coarseness is admissable; but then it must be so exclusively of masculine description as never to be discovered in a female of his get.

1. The head of the bull may be shorter than that of the cow, but the frontal bone should be broad, the muzzle good size, throat nearly free from hanging folds, eyes full. The horns should have an upward turn, with sufficient size at the base to indicate strength of constitution..... 10
2. Neck of medium length, somewhat arched, and large in the muscles which indicate power and strength. 10
3. Forequarters—shoulders close to the body, without any hollow space behind; chest broad, brisket deep and well developed, but not too large..... 7
4. Back short and straight; spine sufficiently defined, but not in the same degree as in the cow; ribs well sprung, and body deep in the flanks..... 10

5.	Hindquarters—long, broad and straight; hip bones wide apart; pelvis long, broad and straight; tail set on a level with the back; thighs deep and broad.....	10
6.	Scrotum large, with well developed teats in front.....	7
7.	Legs, short in proportion to size, joints firm. Hind legs well apart, and not to cross in walking.	5
8.	Skin yellow, soft, elastic, and of medium thickness.....	10
9.	Color, red of any shade, brown or white, or a mixture of these—each color being distinctly defined.....	3
10.	Average live weight at maturity, about 1,500.	10
11.	General appearance, including style and movement.....	15
12.	Escutcheon, large and fine development.....	3
	Perfection.....	100

Scale of Points of Ayrshire Cow.

(ADOPTED FEBRUARY 21, 1889.)

The following scale of points for the Ayrshire cow were adopted—being similar to the scale adopted in Scotland in 1884, and changed in a few points to render them applicable to this country.

1. Head, short ; forehead, wide , nose, fine between the muzzle and eyes ; muzzle, large ; eyes, full and lively ; horns, wide set on, inclining upwards..... 10
2. Neck, moderately long, and straight from the head to the top of the shoulder, free from loose skin on the under side, fine at its junction with the head, and enlarging symmetrically towards the shoulders..... 5
3. Forequarters—shoulders, sloping ; withers, fine ; chest, sufficiently broad and deep to insure constitution ; brisket and whole forequarters light, the cow gradually increasing in depth and width backwards.... 5
4. Back, short and straight ; spine, well defined, especially at the shoulders ; short ribs, arched ; the body deep at the flanks..... 10
5. Hindquarters, long, broad and straight, hook-bones wide apart, and not overlaid with

	fat; thighs, deep and broad; tail, long, slender and set on a level with the back...	8
6.	Udder, capacious and not fleshy, hind part broad and firmly attached to the body, the sole nearly level and extending well forward; milk-veins about udder and abdomen well developed; the teats from 2 1-2 to 3 inches in length, equal in thickness—the thickness being in proportion to the length—hanging perpendicularly, their distance apart at the sides should be equal to one-third of the length of the vessel, and across to one-half the breadth.....	30
7.	Legs, short in proportion to size, the bones fine, the joints firm.....	3
8.	Skin, yellow, soft and elastic, and covered with soft, close, woolly hair.....	5
9.	Color, red of any shade, brown or white, or a mixture of these—each color being distinctly defined.....	3
10	Average live weight, in full milk, about 1000 pounds.....	8
11.	General appearance, including style and movement.....	10
12.	Escutcheon, large and fine development.....	3
	Perfection.....	100

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