into a warm room, poured into a warm container, and then whipped with a warm beater. Under such conditions the temperature of the cream may rise several degrees, and its whipping ability often becomes so greatly impaired that it fails to whip. If the housewife will remember the importance of temperature during the process and have the cream cold and all utensils chilled, she will avoid many disappointments, and there will be fewer complaints received by dairies supplying whipping cream.

The Age Factor

When cream is separated for home use, it is well to bear in mind that age is an important factor in whipping cream. Cream which fails to whip when fresh often develops into an excellent whipping cream when aged at a temperature sufficiently low (45° F.) to prevent the rapid formation of acidity. Care must be used, however, in aging cream. If the temperature exceeds 50°, the cream may become sour before the desired effect of aging takes place. It may also develop off flavors unless it is aged under ideal conditions free from odors.

The time required for aging varies with the butterfat content. However, if the cream contains 30 per cent or more butterfat, the greatest effect will take place during the first 12 hours of aging, and at approximately 36 hours the maximum ability to whip is approached.

Therefore, in selecting a whipping cream it is important to select one that is at least 12 hours of age and contains 30 per cent or more of butterfat. Then if the cream is properly handled and kept at a temperature of 45° F. or lower before and during the whipping process, most whipping-cream troubles and disappointments will be over.

C. J. Babcock, *Bureau of Dairy Industry.*

Dairy Bulls from Proved Sires Increase Output of Daughters

Purebred Holstein-Friesian and Jersey bulls that have shown the ability to transmit to their daughters the capacity for uniformly high milk and butterfat production have been constantly in service at the experimental farm of the Bureau of Dairy Industry at Beltsville, Md. Sons of these proved sires have been placed with dairy farmers and institutions in Maryland and Virginia for use as herd sires on condition that the farmers raise all daughters of these bulls and furnish satisfactory production records on their herds. Sufficient data on the productive ability of the daughters of some of these bulls are now available to determine their transmitting ability.

Of the bulls used in this cooperative work, 14 are sons of 4 unrelated, proved Holstein-Friesian sires, and 12 are sons of 5 proved Jersey sires. These 26 sons were mated both to purebred and grade cows and have sired 257 daughters. The Holsteins have 181 daughters and the Jerseys 76 daughters with completed records. Most of the daughters and dams were tested through dairy herd-improvement associations and were handled under average farm conditions. Both daughters' and dams' records in Tables 2 and 3 have been calculated to maturity by applying the factors prepared in the Bureau of Dairy Industry. All of the daughters' records were made during the first lactation period, while those of the dams were made during various lactation periods.

The average production records of the daughters and of the dams of the daughters are shown in Tables 2 and 3. Only those sires having three or more daughters are considered in this tabulation.

TABLE 2.—*Average production records of daughters of 14 Holstein-Friesian bulls each having three or more daughters, compared with the records of the dams of the daughters*

Sire No.	Daughters and dams	Daughters			Dams of daughters			Increase or decrease of daughters over dams	
		Milk	Butterfat		Milk	Butterfat		Milk	Butterfat
	Number	*Pounds*	*Per cent*	*Pounds*	*Pounds*	*Per cent*	*Pounds*	*Pounds*	*Pounds*
315	4	11,053	3.38	373.7	7,807	3.74	292.2	3,246	81.5
318	13	10,522	3.76	396.1	7,447	3.90	291.0	3,075	105.1
323-R	54	14,022	3.26	456.7	11,806			2,216	
324-R	6	11,908	3.66	435.8	8,662	3.89	337.7	3,246	98.1
329-R	20	9,785	3.31	323.9	7,892	3.54	279.4	1,893	44.5
331-R	3	11,920	3.60	431.0	11,159	3.57	398.0	761	33.0
335-R	32	15,710	3.33	523.5	12,584			3,126	
343-R	11	9,780	3.62	354.0	7,751	3.86	299.0	2,029	55.0
344-R	5	9,414	3.80	358.0	7,294	4.18	305.0	2,120	53.0
355-R	5	11,042	3.22	356.0	9,191	3.56	327.0	1,851	29.0
363-R	10	8,968	3.97	356.0	7,485	3.57	267.0	1,483	89.0
354-P	5	8,656	3.50	303.0	9,647	3.51	339.0	[1] −991	[1] −36.0
358-P	8	14,456	3.46	501.0	13,345			1,111	
366-P	5	10,378	3.31	344.0	10,170	3.38	344.0	208	
181 daughters and dams average		12,465			10,273			2,192	
87 daughters and dams average		10,122	3.55	359.6	8,194	3.69	302.1	1,928	57.5
181 daughters average		12,465	3.40	423.8					

[1] Minus sign indicates decrease.

TABLE 3.—*Average production records of daughters of 12 Jersey bulls each having three or more daughters, compared with the records of the dams of the daughters*

Sire No.	Daughters and dams	Daughters			Dams of daughters			Increase or decrease of daughters over dams	
		Milk	Butterfat		Milk	Butterfat		Milk	Butterfat
	Number	*Pounds*	*Per cent*	*Pounds*	*Pounds*	*Per cent*	*Pounds*	*Pounds*	*Pounds*
517-M	10	10,271	5.13	527.0	9,543	4.84	462.0	728.0	65.0
527-M	5	5,962	5.19	309.2	5,239	4.96	259.8	723.0	49.4
537-M	3	7,226	5.52	399.0	6,015	5.07	305.3	1,211.0	94.0
544-M	8	8,348	4.90	410.0	10,152	3.98	404.0	[1] −1,804.0	6.0
563-M	7	6,354	4.92	312.0	5,873	4.76	279.0	481.0	33.0
579-M	5	5,397	5.08	275.0	5,496	4.45	244.0	[1] −99.0	31.0
538-K	8	8,869	4.39	389.5	6,745	4.49	301.0	2,124.0	88.5
548-K	7	8,223	5.01	412.0	6,914	5.17	357.0	1,309.0	55.0
549-K	5	6,311	4.79	302.2	6,761	4.78	323.0	[1] −451.0	[1] −21.0
560-S	7	6,811	5.49	373.0	4,957	5.34	264.7	1,854.0	109.1
577-T. R	5	6,911	5.68	392.4	5,544	5.37	298.0	1,367.0	94.4
540-VL'F	6	8,996	5.10	459.0	7,702	4.77	367.3	1,294.0	92.0
76 daughters and dams average		7,746	5.04	390.7	7,030	4.74	333.3	716.5	57.4

[1] Minus sign indicates decrease.

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Yearly Production Averages

The average yearly production of the 181 Holstein daughters when calculated to a mature basis is 12,465 pounds of milk, as compared with 10,273 pounds of milk for their dams, an average increase of 2,192 pounds.

The average yearly production of the 87 daughters and dams having both milk and butterfat records is 10,122 pounds of milk, and 359.6 pounds of butterfat, as compared with 8,194 pounds of milk, and 302.1 pounds of butterfat for their dams, an average increase of 1,928 pounds of milk, and 57.5 pounds of butterfat.

The average yearly production of the 76 Jersey daughters when calculated to a mature basis is 7,746 pounds of milk, and 390.7 pounds of butterfat, as compared with 7,030 pounds of milk and 333.3 pounds of butterfat for their dams, an average increase of 716.5 pounds of milk and 57.4 pounds of butterfat.

When the individual milk-production records of the 181 Holstein daughters were compared with the records of their dams it was found that 150 exceeded their dams in milk. Of the 87 daughters and dams having both milk and butterfat records, 68 daughters exceeded their dams in milk, 71 in pounds of butterfat, and 33 in per cent of butterfat.

When similar comparisons were made of the 76 Jersey daughters and their dams, 48 daughters exceeded their dams in milk, 58 in pounds of butterfat and 50 in per cent of butterfat.

It will be noted in Tables 2 and 3 that 22 of the 26 sires have daughters that show an increase in average milk production over that of their dams, and that 24 of these sires have daughters that show an increase in both milk and butterfat production.

The value to dairy farmers of this increased production based on the average price of milk for 1930, paid to producers in the region where these bulls were used, would amount to $70.14 per cow per year for the Holstein group, and $31.17 per cow per year for the Jersey group. The total value of the increase in production for two groups is $15,064.26 per year.

While the increase in production derived from the daughters of sons of proved sires commands the dairy farmer's attention, it also reveals the fact that the chance of obtaining unprofitable daughters is greatly lessened when sons of proved sires are used.

C. J. STAUBER, *Bureau of Dairy Industry.*

DAIRY Cows Fed More Economically If Grain Is Properly Apportioned

The proper and economical feeding of the dairy cow consists in providing all the feed nutrients she requires, not only in the form best adapted for her use but also at the lowest cost and without waste. This requires that she be fed all or nearly all the good roughage she will eat and in addition, except for a few weeks immediately after calving, enough grain of suitable protein content to meet her requirements for milk production and for maintaining her body with no loss of weight and with only a small gain. The nutrients needed to meet these requirements will be supplied with a fair degree of accuracy if the feeder follows one of the commonly used feeding standards.

When the dairy cow is not on pasture, the usual method of feeding is to give her all the roughage she will consume in the form of hay, or