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Shorthorns as Milkers.

During the last five years a series of experimental tests have been carried on by Dr. Voelcker, under the auspices of the British Dairy Farmers' Association, to determine the milk-giving and butter-producing powers of the several classes entered for milking prizes. These classes were divided into Ayrshires, Dutch or Holsteins, Jerseys, Shorthorns, and any other pure breeds and cross-breeds. A summary of averages, the analyses showing the weight of milk given by a number of cows in twenty-four hours, and the amount of butter-fat and solids, is subjoined:—

Breeds.	No. Samples.	Lbs. Milk.	Fat.	Total Solids.
Shorthorns.....	23	44.91	3.79	12.7
J Jerseys.....	19	39.27	4.28	13.6
Guernseys.....	10	25.49	4.80	14.09
Dutch.....	6	46.99	2.97	11.8
Crossbred.....	3	51.66	3.15	12.31

In a work by Mr. J. C. Morton, on Dairy Husbandry, the yearly returns from two dairy farms are given. Fifty Shorthorns on one farm gave 750 gallons per head per year, and on another farm a like number of cattle give 650 gallons. On a good Derbyshire farm 690 gallons per head, for the season of nine months, were reported. On Lord Warwick's farm 735 gallons per cow were recorded for 50 cows in ten months. On the farm of Mr. Tisdall, in 1880, sixty cows produced 948 gallons per head, in a period of ten and three quarter months, under liberal diet, the records of the best milkers in the herd having been taken. Mr. Tisdall says that "probably the mean of these cited cases would be a fair basis to rely upon from well managed Shorthorns." The records of Mr. Burnett, of the Deerfoot Farm Jersey herd, show that the average yield of that herd for a period of seven years, from 1873 of 1879, was 605 gallons per head per annum. Mr. George Simpson's herd, at Reigate, of 29 cows, averaged 11 to 12 quarts per day, and 18 lbs. of their milk gave one pound of butter. Mr. Tisdall thinks that it will be fair to estimate the annual yield of milk for the Jerseys at 500 to 520 gallons, at the same rate of analyses as that of the dairy show data. In Denmark, 300 cows produced 1,100 gallons daily, averaging nearly 9 quarts each. Another herd of 36 cows averaged 548 gallons in the year 1868, and 661 gallons in 1872. In another case 660 gallons per head per annum is reported. It is thought to be fair, therefore, to credit these cattle with an average annual yield of 650 gallons each on the qualitative basis of the dairy shows. Only one test is given of a Hereford-Shorthorn cow; but that indicates that the white-face can be developed into a good dairy animal. One three-quarter Shorthorn and one-quarter Hereford gave 14.1 quarts daily for 9.6 months.

From the above figures the following has been estimated as being the relative value of the produce of the principal dairy breeds:—

Breeds.	Average annual yield of milk.	As Butter at 18. 3d. lb.	As Cheese, at 75s. cwt.	As Milk, at 3d. per gal.
	Gals.	£ s. d.	£ s. d.	£ s. d.
Shorthorn.....	700	25 10 0	24 13 0	26 5 0
Jersey.....	520	17 7 6	17 5 0	19 10 0
Guernsey.....	460	15 5 0	16 7 0	17 5 0
Dutch.....	650	16 4 0	19 19 0	24 9 0

In the paper from which the above is quoted Mr. Tisdall says that "the first inference from

these calculations is plain and indubitable. All other things being equal, the Shorthorns is by far the most profitable animal for general dairy purposes. Where richness of milk and butter is chiefly desired, the Channel Island tribes seem to fulfill those requirements better and at less cost, their consumption of food being small. Where a town milk supply alone is aimed at and quantity is most in request, the Dutch race, or, better still, the Dutch crossed with Shorthorn sires, produces the desired result at the lowest outlay, but their feeding qualities are not equal to some other breeds. This is the final factor in the problem, "to what base uses may they return?" If the shambles are base they are inevitable, and offer the ultimate test of the flesh-forming capacity of our stock. It may be questionable if the Jersey exceeds the Dutch in this particular, or if the Guernsey much surpasses those other two races, but it is quite unquestionable that in aptitude to fatten and lay on flesh of fine texture rapidly, the Shorthorn and its grades by far exceed all the other dairy breeds. This valuable quality, in addition to their milking propensity, renders them superior to all others for the purposes of the dairy farmer, and all our leading dairy districts attest this fact by using Shorthorns more or less pure bred, or native sorts repeatedly crossed with them.—[Prairie Farmer.

The Ripening of Cream.

In a paper prepared by the late Prof. L. B. Arnold, and read before the New York State Dairyman's Association at Middleton last winter, the ripening of the cream was pronounced an essential item in the making of perfect butter. Prof. Arnold explained the two kinds of changes which go on in cream when ripening, and which are induced by two distinct causes. The change most readily noted is the development of acidity, which is the result of fermentation pure and simple, and is brought about by the growth of organic germs whenever the cream is warm enough to allow them to sprout and grow. The only direct effect of the fermentation is to change the milk sugar in the cream into an acid. The acid, when formed, coagulates the albuminous matters in the cream, separating them into a solid curd and serum. This facilitates churning, but has no effect whatever upon the fatty parts of the cream until the acid becomes strong enough to begin to cut the butter flavor, which is thereby reduced, to the injury of the butter.

It is generally supposed that souring develops butter flavor. No greater mistake could be made. It has no influence upon flavor at all until it becomes strong enough to commence injuring it. Butter flavor is increased while the cream is ripening, but it is effected by the action of the air upon the fat in the cream, and not at all by fermentation.

If a sample of sweet cream is divided, and both parts are kept at a favorable temperature for ripening, and the air is excluded from one and a free exposure given to the other, both will sour at the same time, but flavor will only be increased in the one exposed to the air. Churning the two parts will show this.

The free oxygen of the air under favorable conditions oxidizes at least some portion of the milk fats, with the result of developing butter flavor. Oxidation is most effective while the cream is sweet and at the churning temperature, or about 60°. What is wanted, therefore, for developing highest flavor, is to give the sweet cream the

longest and fullest exposure to the air at a proper temperature.

Those butter makers who add sour milk or buttermilk to hasten the souring cannot have butter which reaches the highest perfection in flavor. The sooner the minds of dairymen are disabused of the idea that the ripening of cream and the development of high flavor in butter lie only in the souring of the cream, the better it will be. The importance of atmospheric influence in the ripening of the cream must be recognized by those who wish to produce the finest quality of butter.

The most advanced butter makers maintain the perfect exclusion of the low cooled milk and cream from the air. Whenever warm air, or air comparatively warm, comes in contact with colder milk, or cream, or water or any other liquid, the warm air, touching the cooled liquid, is condensed, and deposits moisture in the form of dew on the surface of the cold liquid. With the dew thus deposited go all the impurities the air may contain. In the case of milk and cream, these deposits impair, in a marked degree, the flavor and keeping quality of the butter made from them. It is not essential that air should be excluded from milk until its temperature falls to the temperature of the surrounding air, but when it drops to that point, exclusion from air is important.

Churning should be done at the first appearance of acidity. Do not wait until the cream gets intensely sour and stale. In churning, the butter should be granulated in the churn, instead of being gathered into a lump. It should be cleansed of buttermilk by washing and not by working. After lightly salting, it must be worked into a solid condition with the slightest working that will effect that end.

Cream Separation.

At the Bath and West England shows, recently held in Britain, fourteen gallons of milk were given at eleven o'clock to several competitors, (each representing a different system of skimming the milk). One of them, representing the Victoria cream separator, which is worked by steam, separated the cream at once. But the others allowed it to remain standing till eight o'clock, the next evening, when the skimming was done. The cream was then kept under lock and key, in water surrounded by ice for nearly four days. Then it was churned, to bestow the certificate of merit to the deserving candidate. The test produced the following results, with the weights:—

	Weight of Butter.
	lb. oz.
1. The Victoria Cream Separator.....	4 13
2. Jersey Creamer.....	4 12
3. Rymer Pan.....	4 12
4. Shallow Pan.....	4 9
5. Dev. re.....	3 15
6. C. n Creamer.....	3 14
7. S. tz System.....	3 10

From this it will be seen that the large separator driven by steam gave nearly one pound of butter more than the creamery can, or, in other words, it gave 24% more butter than the latter system. And the old despised shallow pan gave 11 oz. or 17½% more than our much esteemed (?) creamery can. Our advice is do not forsake the shallow pan system until you can procure something better.

The small Hand Separator, which has been frequently referred to in the ADVOCATE, will give about the same results as the larger ones driven by steam.

The machine will, no doubt, save much labor,