

used, and this would result in a large proportion of cream rising. In order to prevent rancidity, it is very important that the cream should be churned at once. In small dairies, however, this is impracticable, and in such cases every endeavor should be made to prevent the casein from turning.

And here let me say, do not churn too quickly. Do not be in too great a hurry and turn irregularly, because if you do failure will almost certainly result. Turn steadily, at about forty-five or fifty revolutions per minute. As soon as butter comes—and this you can tell by the sound—it is time to stop the churn and deal with the butter kernels. Strain off the buttermilk, put some cold water into the churn, and turn it again two or three times; this will have the effect of washing the butter. Perhaps the best way is to incorporate the smallest quantity of salt water, into the churn, so as to distribute the salt evenly among the butter. I do not recommend too frequent washing, as this only results in the butter losing that fine natural flavor which it should possess. After each process of butter-making, the churn and other utensils should be cleansed with boiling-hot water. In butter-making everything depends upon scrupulous cleanliness, the use of plenty of hot water, or steam if it is available, followed by cold water. (1)

"One of the first necessities in the making of good butter is to have at command an abundance of cold water—spring water if possible, or pump water—so as to get rid of the animal heat as soon as the milk comes from the cow. By this means, also, you get rid of the animal flavor. Whenever you have the means of deep setting milk for cream, I strongly advise you to do so. If you take care to keep cream as closely as possible to a temperature of 55° to 57° Fahr., you will not only get a larger produce of butter, but also butter of a better flavor. By using deep pans, and in hot weather putting a lump or two of ice in the vessel of water in which the pans are placed to preserve the temperature below 58°, I am ready to guarantee that cream will keep without turning sour for a period of at least eighteen hours. *Butter should always be made from perfectly sweet cream.*

"In the art of butter-making chemistry is not required. It is a simple mechanical operation. Some people are of opinion that a certain degree of sourness in cream is necessary in order to obtain good butter. My experience has taught me differently, and I denounce the sour-cream theory as radically wrong. There is an opinion that the longer cream continues cold the worse it becomes. Sometimes a novelty, if carefully investigated, proves to be far more useful when thoroughly worked out and practically tested than the experience of the man who has been going on in his own way for twenty years. A great many such men maintain at the present time that the best quality of butter can only be made if cream is allowed to turn a little sour. This is a great mistake. The sweeter the cream, the better the butter will turn out, other circumstances being equal.

"Milk is a mechanical mixture, not a chemical compound. It is well to remember this, because it is not by chemical means that we separate cream from skim milk, but purely by mechanical means.

"The cream globules rise to the surface, and by proper management the cream is taken away from the skim milk. In this way we obtain the cream perfectly sweet, and provided the food given to the cows is of such a nature as to produce sweet and not 'turnip' cream, we can obtain excellent butter by churning it properly. Although my profession is that of a chemist, I would impress upon you that the less chemicals you use, or the less you attempt to meddle with chemical agencies in the separation of butter from the cream,

the better will be the result. If you pour off the buttermilk as soon as the butter comes, you will have butter much more free from the cheesy or curdy envelope which originally encased it in the creamy globule. And you will never make first-rate butter unless you preserve a regular temperature in churning. The temperature should never rise above 60°, it should be rather below than otherwise. I am no advocate of all these beautiful air churns, and complicated contrivances. You do not want them. In a good churn you simply require an implement which enables you to churn sufficiently without overdoing it. All churns should be so constructed as to be easily cleaned. The requisites for successful butter-making are, a well-constructed dairy, not subject to great fluctuations of temperature; a *dry floor*, perfect cleanliness, appliances for introducing hot or cold water, or steam; and in the last place, washing it moderately, and salting it in the churn. If you want to make first rate, firm, fresh butter, there is no secret; no great chemical skill is required, only ordinary attention to a few simple principles; and by observing them I warrant that you obtain for your butter a better price."

FLESH AND FAT PRODUCERS.

The *American Agriculturist* makes up from the published analyses of the most eminent agricultural chemists the following table exhibiting the relative nutritive value of different feeds. It corresponds strictly with the experience of many noted English feeders, and is probably the most trustworthy information yet collected in so compact a form.

	Flesh.	Fat.
Turnips	1	5
Rutabagas	1	7
Carrots	1	7
Mangels and kohl rabi	2	8
Straw	3	16
Potatoes	2	17
Brewers' grain	5½	18
Wheat and barley	12	67
Dried brewers' grains	16	70
Earth-nut cake	20	40
Beans (English field)	22	46
Linseed	23	92
Rice meal	6½	77
Locust bean	7	72
Hay (early cut)	8	50
Millet (seed)	8	76
Buckwheat	9	60
Malt	9	76
Rye	11	72
Oats	12	63
Corn	12	68
Palm-nut meal	18	97
Tares (seed)	27½	57
Linseed cake	28	56
Bran and coarse mill stuff	31	54
Rape cake	31	53
Decorticated earth-nut cake	39	45
Decorticated cotton-seed cake	41	77

It will be seen from the above that cotton-seed meal has no superior as a flesh-former, and that for fattening it is better than every other article of stock feed. In a very short time it has established itself, both in this country and in Europe, as the food for beef cattle and for dairy purposes. (1)

(1) Yes, but why should it be sold for \$35 a ton in England, and at \$45 a ton here? *The Witness* gave that as the price ten day ago a good manure and feed merchant would do well here. A. R. J. F.

(1) Cold water first—then scalded or steamed. A. R. J. F.