

milk at the same price per quart, and while variations in the quality of milk may be due to difference in the breed, or individuality of the cow, to methods of feeding and handling, it is to be remembered too that they may be due to adulteration, the chief methods being (1) the addition of water, (2) the removal of a portion of the fat either with or without the addition of water, and (3) the addition of preservatives.

The value of milk as compared with other foods, may be seen from the table on page 2 which is from the U. S. Department of Agriculture, Farmers' Bulletin, No. 74, 1898.

The principal foods derived from milk, which are in common use, are:—

(1) Condensed milk (2) skim milk (3) cream (4) butter (5) butter milk (6) cheese (7) whey.

CONDENSED MILK

Condensed milk is prepared by slowly evaporating the water of milk by moderate heat *in vacuo* to the consistence of honey. There are two varieties, one which is condensed to about one-fourth of its bulk and superheated, and to which little or no sugar is added, and a stronger to which cane sugar is added in excess. It is soluble in water and is very useful when fresh milk cannot be obtained but otherwise has no advantage over the natural product.

SKIM MILK

The value of this derivative of milk is not generally appreciated. It is obtained by removing the greater part of the cream either by "skimming" or by the use of a cream separator. Ordinary shallow pan setting leaves anywhere from one-tenth to one-quarter of the original fat of the milk in the skim milk. Deep cold setting removes the fat much more completely, as does also the separator. When taken with bread or used in cooking, skim milk forms a very nutritious addition to the food. The ingredient of foods which costs the most, has the greatest value, and is most apt to be lacking in ordinary dietaries is protein. Skim milk has nearly all the protein of the whole milk. By the removal of the fat in the cream, the milk loses about one-half of its full value but practically none of its protein. What is left as skim milk has all the value of the whole milk for the building and repair of tissue, for the making of blood and muscle and bone, and at the same time half the value of the whole milk for supplying heat and energy. For these reasons skim milk should be more widely used than it is.

CREAM

Cream is the fat of milk. It rises to the top of vessels in which milk is allowed to stand. The globules of fat collect and form a yellow layer. This forms a wholesome and agreeable food, and is an excellent substitute for Cod liver oil in tuberculosis. Ice cream when simply made is likewise very nutritious.

It should be eaten very slowly, so that it may be well warmed in its passage to the stomach. The fuel value of a pint of cream is about the same as 1½ pounds of bread or 1½ dozen bananas, or 4½ pounds of potatoes. It is not, however, an economical food.

BUTTER

Butter is made from cream by a mechanical process, the chief feature of which is the breaking of the albuminous envelopes which enclose the fat globules. The fat globules run together and salt is added. An average sample of good butter contains:—

	Per cent.
Water	11.83
Fat	82.76
Casein	0.18
Salt	5.22
	100.00

Taken with other foods butter is highly digestible and nutritious.

BUTTERMILK

Buttermilk is the residual milk after the butter fat has been removed by churning. It is very wholesome and a glass of it contains as much nourishment as two ounces of bread, or a large potato, or half a pint of oysters.

CHEESE

Cheese is the casein of milk separated by rennet, and it is a very nutritious food, as, weight for weight, it contains about as much protein as meat. Cheese made without fat, consisting of almost pure casein is difficult to masticate, is slowly dissolved in the gastric juice and is slowly digested, but cheese which retains some fat is friable, light and easy of digestion.

WHEY

Is the liquid left when the casein and fat have been removed as cheese by the action of rennin. It is very palatable and often very much enjoyed by invalids.

THE DIGESTIBILITY OF MILK

Milk is considered to be a very digestible food. The value of a food depends not only upon the quantity of nutrient material which it contains, but also upon the quantity of each of these which is actually digested and used by the body for its support. The protein of milk, as has been found by experiment, especially when it is used with other food materials, is readily and completely digested. In this respect it is similar to the protein of meat and fish, but differs from the protein of vegetables which is much less completely digested. The fat of milk is an extremely fine emulsion and is therefore in a sense predigested and so may be very readily assimilated.

When milk enters the stomach it is speedily curdled by the action of the acid gastric juice. If taken alone in large quantities the