

# Oregon Agricultural College Extension Service

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## The Milky Way

By

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*There was an old woman who lived in a shoe,  
Her children were thin but she knew what to do.  
She fed them a quart of milk every day,  
And gaining in weight they began right away.*

Why are school children the country over being encouraged to make Mother Goose milk rimes similar to the one above which came from a grade school in one of our large cities? Why are milk stories and lectures, milk posters, milk plays, milk campaigns, all kinds of milk propaganda, being featured in our schools and communities? Why is there an increasing effort to keep milk and milk products constantly in the minds of grownups as well as children? To increase the use of milk and milk products in the diet of men, women, and children throughout the United States is the easy answer to these questions.

### MILK FOR HEALTH

But who, it may be asked, is back of this "Eat More Milk" movement? Is it the dairy industry only or are there other forces interested in the greater use of milk from the health standpoint alone? National and state dairy councils, it is true, are actively engaged in presenting to the public the case for milk; but their program, chiefly an educational one, is based largely on the findings of chemists, physiologists, nutrition specialists, doctors of medicine and dentistry, and of others working for the promotion of health.

The purpose of telling again briefly in this bulletin the story of milk as it is known today is to point out and reemphasize some of the important milestones on the milky way that leads to health.

### MILK A UNIQUE FOOD

Milk holds the unique place among foods of being the only one whose single purpose in nature is to serve as food, and milk is the one food for which there is no satisfactory substitute. All mammals produce milk for their own young, and in different parts of the world var-

ious animals produce it for human food as well, such as reindeer in the Arctic regions, sheep in Europe, mares in parts of Russia and Asia, camels in desert countries, and goats in the hilly districts of Europe, Central America, and to some extent in the United States. Practically all of the milk and dairy products, however, in this country and in other civilized countries with a favorable climate are furnished by cows, which make an unusually good return for the feed and care given them.

In order to appreciate fully the significance of milk as a human food, it is necessary to realize the varied food needs of the human body and to see in what respects milk supplies these needs.

### ESSENTIAL GROWTH MATERIALS

One of the most important phases of both plant and animal life is growth. In common with other animals man's physical growth depends to a large extent on food. Obviously, bones, teeth, muscles, and the various parts of the body, being so different in character, must be made up of a variety of building units. For instance, one set of units combines to make bones. Quite a different set of units is needed in muscle building. It is also obvious that all these growth materials have only one source, the food eaten. Since foods themselves vary tremendously in their content of growth materials, it is essential to know what materials are needed for growth and which foods will supply them.

### PROTEINS IN MILK

Proteins, which contain nitrogen essential to every living cell, are needed in larger amounts for growth than all the other materials that enter into body tissues. Every food that grows contains some protein, some foods being rich in protein, others containing very little. Proteins, however, differ markedly and are not equally valuable for growth. Milk contains at least four proteins, and the two present in the largest amounts not only are of excellent quality for the growth and repair of body tissues but they are easily and thoroughly digested. Breadstuffs and other forms of cereals which play so large a part in man's food have deficient proteins. By the addition of milk, the deficiencies of the cereal proteins are made good. From the standpoint of protein, bread and milk is a great improvement over bread alone or even bread and butter.

### MINERALS IN MILK

Mineral elements are present in the human body to the extent of several pounds, in the bones, in the teeth, in the body fluids, and in other tissues. Mineral elements therefore constitute a most important group of materials to be provided for growth and repair. The typical American diet with its bread and cereal, mostly of the refined varieties, its meat and potatoes, its sugar and fat, and its often scant amount of green vegetables is made up of products notably poor in mineral elements, particularly in calcium or lime which is needed in larger amounts in the body than any other mineral. Successful bone and teeth making depend upon an abundance of calcium in the food eaten. Milk is without question the most available source of calcium. Careful studies indicate that a shortage in calcium is probably one of the most serious errors in the eating habits of the present day. From the standpoint of the calcium supply alone, a more liberal use of milk is legitimately urged. Milk,

moreover, contains all of the mineral elements required in human nutrition, and with the exception of iron contains them in good proportions. The total amount of iron in milk is low, but that present is in a form unusually available to the body.

#### VITAMINS IN MILK

The existence of vitamins and the necessity of having them present in every-day food is now established beyond a doubt. Vitamins A, B, and C are well known; vitamin D has been determined chemically; and vitamin X is discussed by some investigators. There may be others. The lack of any one or more of these substances may have serious effects on growth and health. Fresh, unrefined, unpreserved foods have the highest vitamin content. Fresh vegetables, fresh fruit, unrefined cereals, fresh eggs, and fresh milk are the vitamin-rich foods. The vitamin content of milk, to be sure, depends somewhat on the vitamin content of the food of the cow giving the milk; but in general it may be said that milk contains all three of the vitamins A, B, and C. In passing, a statement on the food value of raw versus pasteurized milk is given. All available evidence goes to show that the only effect of the proper pasteurization of milk on its food value is partly to destroy vitamin C. This loss is easily overcome by eating fresh fruits and vegetables.

#### ENERGY IN MILK

Food for energy as well as for growth is needed by man, and milk, besides the protein already mentioned, provides two additional fuel foods, lactose or milk sugar and fat which may be separated from the milk in the form of butter or cream. Both the sugar and the fat of milk are easily and completely digested. It is the milk fat which carries vitamin A.

#### SUMMARY OF FOOD VALUE OF MILK

In considering the food needs of man and the food stuffs in milk, we have seen that milk responds to the call for protein with two food elements of excellent quality, unexcelled by any others. Milk contains all the mineral elements required in human nutrition, and for the most part in good proportions with an outstanding amount of lime, which is deficient in many present-day diets. Milk from a suitably fed cow is rich in the three known vitamins essential to growth and health. Milk supplies energy as well as growth material in the form of sugar and fat. No other single food contains as many food materials in as good proportions and in as available a form as milk. It is a valuable supplementary food for all cereals and breadstuffs and especially for those which are low in minerals and vitamins and have inferior proteins; for meat which is low in vitamins and most minerals; and for all highly refined or preserved foods which have lost in part their original mineral and vitamin content.

#### MILK NOW CONSUMED

According to available statistics, we are now consuming in this country an average of about one pint of whole milk per capita per day. As a matter of fact, the milk is not so evenly consumed. Some sections of the country are higher milk users than others. In the same communities there are both liberal milk users and non-milk users. In a 1922 bulletin on "Milk and Our School Children," published by the Department of the

Interior, Bureau of Education, Washington, D. C., it was reported that of 7,738 American school children from grade schools covering several states, only 50 percent were drinking any milk. A state-wide school survey in Oregon in 1920 showed an average of 30 percent of the school children not drinking milk, with one small town averaging as high as 72 percent non-milk users. There is, it is admitted, the possibility of milk-made foods being eaten in homes where children do not drink milk, but the mother who does not train her children to drink milk probably does not include in cooked foods the full daily allowance of milk for each child.

### A QUART OF MILK A DAY FOR GROWTH

What standard shall we set as the ideal amount of milk for a child or an adult to take in some form every day? A series of experiments with real children undertaken not long ago under the direction of Dr. H. C. Sherman of Columbia University led to the conclusion that a quart of milk a day from infancy through the growing period, regardless of other articles of diet, insures the best storage of calcium and phosphorus and so presumably the best development of bones and teeth.

At the World's Dairy Congress in Syracuse, New York, October, 1923, Dr. Sherman concluded a discussion of the above experiments with these words: "In view of such evidence it seems a mistake to limit the recommendation of a quart of milk a day to the ages from infancy to puberty. Undoubtedly it would better be extended, probably to all ages. Certainly it seems to me the boy should have his quart of milk per day until he is a man full grown and the girl should continue to take her quart of milk a day until as a woman she has weaned her last child."

Wholesale advice to "Drink-more-milk" may be unwise, for both children and adults may have a real or fancied limitation to the amount of fluid milk they can take. There are, however, hundreds of possibilities for using milk in milk-made foods and in milk products other than fluid milk. A suggestive outline of milk-made dishes is given below. Any cook book contains recipes for the suggested dishes.

Milk is not a "cure all." It does not take the place of other necessary foods. At the same time, it is undoubtedly vital to the health of the nation and should be given its rightful place in a varied diet for both young and old.

### WAYS OF USING MILK AND MILK PRODUCTS

#### I. Cold Milk Drinks

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|----------------|---------------------------------------|
| 1. Plain milk  | 1. A perfect drink.                   |
| 2. Buttermilk  | 2. Healthful, refreshing, satisfying. |
| 3. Milk shakes | 3. Cold milk with a little sugar and  |
| a. Cherry      | flavoring added is nourishing         |
| b. Loganberry  | and refreshing. Use 1 to 2 tea-       |
| c. Orange      | spoons of sugar and a few             |
| d. Pineapple   | drops of extract or a few tea-        |
| e. Raspberry   | spoons of fresh or canned fruit       |
| f. Strawberry  | juice to one glass of milk, or a      |
| g. Chocolate   | sirup may be made of the sug-         |
| h. Vanilla     | ar, flavoring material, and wa-       |
| i. Caramel     | ter and added to the milk.            |
| j. Maple       |                                       |

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| <p>4. Egg nogs</p> <p style="margin-left: 20px;">a. Vanilla</p> <p style="margin-left: 20px;">b. Chocolate</p> <p style="margin-left: 20px;">c. Coffee</p> <p style="margin-left: 20px;">d. Nutmeg</p> <p>5. Malted milk</p> <p style="margin-left: 20px;">Any flavor desired</p> | <p>4. Beat an egg well, add sugar to taste, a pinch of salt and beat again; add <math>\frac{1}{2}</math> cup of milk and flavoring and serve cold.</p> <p>5. Mix thoroughly in a glass 2 to 3 teaspoons of malted milk, 1 to 2 tablespoons of flavored sirup, and a little whole milk. Fill the glass with milk, adding if desired whipped cream and a little nutmeg.</p> |
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## II. Hot Milk Drinks

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| <p>1. Cocoa</p> <p style="margin-left: 20px;"><math>1\frac{1}{2}</math> tablespoons cocoa</p> <p style="margin-left: 20px;"><math>1\frac{1}{2}</math> tablespoons sugar</p> <p style="margin-left: 20px;">1 cup boiling water</p> <p style="margin-left: 20px;">3 cups milk</p> <p style="margin-left: 20px;">Few grains salt</p> <p>2. Chocolate</p> <p style="margin-left: 20px;"><math>1\frac{1}{2}</math> squares chocolate</p> <p style="margin-left: 20px;">3 tablespoons sugar</p> <p style="margin-left: 20px;">Few grains salt</p> <p style="margin-left: 20px;">1 cup boiling water</p> <p style="margin-left: 20px;">3 cups milk</p> <p>3. Coffee with milk</p> <p style="margin-left: 20px;">1 cup strong coffee</p> <p style="margin-left: 20px;">3 cups hot milk</p> | <p>1. Scald milk. Mix cocoa, sugar and salt, add boiling water and boil 5 minutes; add scalded milk. Beat with egg beater until froth forms to prevent scum.</p> <p>2. Scald milk. Melt chocolate in sauce pan over hot water, then add sugar and salt and water gradually, stirring constantly. Boil 5 minutes, pour into hot milk, and beat with egg beater. Serve with or without whipped cream.</p> <p>3. Make coffee four times usual strength and add hot milk.</p> |
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## III. Milk with Bread and Cereals

1. Bread and milk
2. Crackers and milk
3. Hominy and milk
4. Hulled corn and milk
5. Breakfast cereal and milk
6. Popcorn and milk
7. Puddings and milk
8. Milk toast

## IV. Milk in Cream Soups.

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| <p>Any cooked vegetable<br/>with a thin white sauce</p> <p>1 cup strained vegetable,<br/>juice and pulp</p> <p>1 cup milk</p> <p>1 tablespoon flour</p> <p>1 tablespoon fat</p> <p><math>\frac{1}{2}</math> teaspoon salt</p> | <p>Melt fat, blend with flour and salt, add milk and cook until the sauce thickens, stirring constantly. Add the vegetable, reheat, season, and serve.</p> |
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### V. Milk in Creamed and Scalloped Dishes

- Any cooked vegetable, fish, meat, or eggs with a medium white sauce. Make sauce as in white sauce for cream soup, add material to be creamed, reheat, season, and serve.
- 2 cups material to be creamed
  - 1 cup milk
  - 2 tablespoons flour
  - 2 tablespoons fat
  - $\frac{1}{2}$  teaspoon salt

### VI. Milk in Chowders and Stews

1. Corn chowder
    - 1 can corn
    - 4 cups sliced potatoes
    - 1 sliced onion
    - 2 ounces bacon
    - 4 cups scalded milk
    - 3 tablespoons butter
    - salt and pepper
  2. Fish chowder
  3. Clam chowder
  4. Vegetable chowder
  5. Crab stew
  6. Oyster stew
1. Chop bacon and fry out, add onion and cook 5 minutes. Par-boil potatoes 5 minutes, drain and add to bacon and onion, then add 2 cups boiling water, cook until potatoes are soft, add corn and milk and heat to boiling point. Add butter and seasonings.

### VII. Milk in Puddings

1. Indian pudding
    - 3 cups scalded milk
    - $\frac{1}{2}$  cup Indian meal
    - $\frac{1}{2}$  cup molasses
    - 1 teaspoon salt
    - 1 teaspoon ginger
  2. Custards
  3. Junkets
  4. Bread pudding
  5. Rice pudding
  6. Cornstarch pudding
1. Pour scalded milk slowly on meal, cook in double boiler 20 minutes, add molasses, salt, and ginger, pour into buttered baking dish, set in pan of hot water and bake two hours in slow oven. Serve with cream.

### VIII. Milk in Breads, Cakes, and Cookies

#### IX. Milk and Cream in Ices and Ice-cream

1. Vanilla Ice-cream
  - 1 quart thin cream
  - $\frac{3}{4}$  cup sugar
  - 1 tablespoon vanilla
1. Mix all together and freeze. This may be varied by adding fruit, nuts, macaroons or other flavoring to the mixture.

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| <p>2. Milk sherbet</p> <p>¼ cup lemon juice</p> <p>1½ cups sugar</p> <p>1 quart milk</p> <p>1 egg white</p> <p>1 cup pineapple<br/>grated</p> <p>Crushed strawberries or other fruits may be added instead of pineapple.</p> | <p>2. Mix sugar and lemon juice, stirring constantly while slowly adding the milk. Pour into the freezer, add the egg white beaten until stiff and partly freeze. Then add the pineapple and finish freezing.</p> |
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#### X. Sour Milk and Sour Cream Dishes.

1. Cottage cheese
2. Salad dressings
3. Pudding sauces
4. Breads
5. Cakes
6. Cookies

#### XI. Cheese Dishes

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| <p>1. Cheese sauces</p>  | <p>1. Add grated cheese to white sauce.</p>  |
| <p>2. Cheese salads</p> <p style="padding-left: 20px;">a. Pineapple and cheese</p> <p style="padding-left: 20px;">b. Peach and cheese</p> <p style="padding-left: 20px;">c. Pear and cheese</p> <p style="padding-left: 20px;">d. Tomato and cheese</p> <p style="padding-left: 20px;">e. Cheese and lettuce</p> <p style="padding-left: 20px;">f. Cheese and celery</p> | <p>2. a. Place slices of pineapple on lettuce leaves, cover with sliced or grated cheese, and serve with salad dressing.</p>                           |
| <p>3. Cheese sandwiches</p> <p style="padding-left: 20px;">a. Toasted cheese</p> <p style="padding-left: 20px;">b. Cottage cheese and jelly</p> <p style="padding-left: 20px;">c. Cottage cheese and prunes</p>  | <p>a. Toast graham bread and butter sandwiches with slices of cheese between.</p>  |
| <p>4. Cheese with eggs</p> <p>3 hardboiled eggs</p> <p>1 tablespoon flour</p> <p>1 cup milk</p> <p>½ teaspoon salt</p> <p>½ cup chopped or grated cheese</p> <p>4 slices toast</p>   | <p>4. Make a white sauce with flour, milk, and seasoning. Add cheese and stir until melted. Add chopped eggs to the sauce and pour over the toast.</p> |

