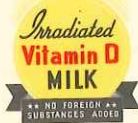




The process of enriching milk with Vitamin D by exposing it to ultra-violet light was discovered, almost simultaneously, by Dr. Harry Steenbock of the University of Wisconsin and Dr. A. F. Hess of New York City. Our dairy has been granted the privilege of providing this community with Irradiated Vitamin D Milk through a license from the Wisconsin Alumni Research Foundation, under the Steenbock patent (U. S. Patent No. 1680818).

The protection and benefits provided by Irradiated Vitamin D Milk have been demonstrated by internationally famous physicians and medical scientists. Be sure to consult *your* physician and dentist regarding the benefits of Irradiated Vitamin D Milk.



**ESPECIALLY IMPORTANT DURING THE DARK COLD "INDOOR" MONTHS**



*Irradiated*  
**VITAMIN D**  
*Milk*

*Why everyone should use*  
**IRRADIATED VITAMIN D MILK**

**ESPECIALLY DURING AUTUMN, WINTER AND SPRING**

● Nature meant to supply the human race with enough Vitamin D from the sun's ultra-violet rays. But people live, study, work and play indoors, especially in Fall, Winter and Spring. Therefore, they cannot get the full benefit of the sunlight.

Moreover, notice the charts below. The ultra-violet of sunlight is very low during most of the year.

Vitamin D, the tooth and bone nourishing vitamin, is not found in vegetables, fruits, cereals, nor in muscle meats. Egg-yolk, butter, regular milk, and certain fish provide small amounts, hardly ever enough for the body's needs.

This lack of enough Vitamin D may not necessarily be serious to normal adults. But

infants and growing children must have enough Vitamin D. Otherwise their bones and teeth may remain soft, will not harden properly, sometimes become deformed.

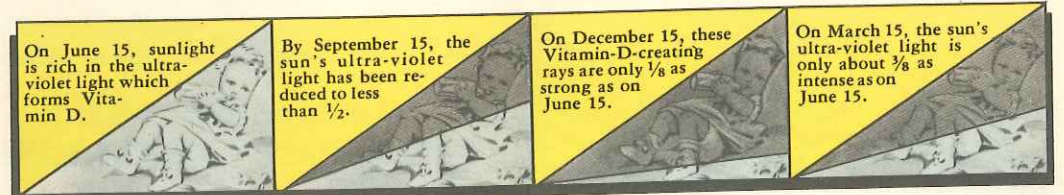
Expectant and nursing mothers too, have a special need for Irradiated Vitamin D Milk. It helps to prevent tooth trouble during these periods. It improves the nourishment needed by the baby, as well as the mother—helps to protect both.

To supply this need for enough Vitamin D, our dairy installed an Irradiator. It exposes the milk to powerful ultra-violet light *which forms Vitamin D in the milk — without any change in flavor!* Drink Vitamin D in this delicious, pleasant way. Order our Irradiated Vitamin D Milk today.

**IRRADIATED MILK IS ALWAYS RICH IN VITAMIN D**

1. Irradiated Milk supplies Vitamin D, calcium (lime) and phosphorus—three necessary elements for building strong, straight bones and sound, hard teeth.
2. It helps prevent tooth decay during the pre-natal and nursing periods.
3. It is more nourishing — a bigger food value.

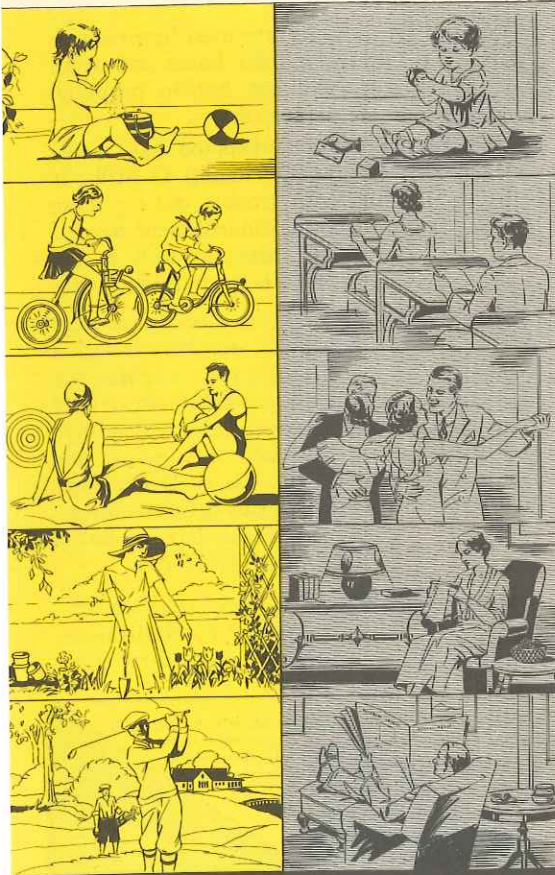
The Sun's Ultra-violet Rays are weak during the Autumn, Winter and Spring Months, hence it is difficult to get enough Vitamin D that way. Note charts below, for Baltimore, based on Laurens . . . "Physiological Effects of Radiant Energy" . . . page forty-four.





See how we miss the benefits of the sun's Vitamin-D-creating ultra-violet rays during the Autumn, Winter and Spring. We don't get out in the sun. Moreover, the sun is poor in ultra-violet during these seasons. But now Irradiated Milk will supply Vitamin D to your family every day.

• SUMMER • Fall • Winter • Spring



## Irradiated MILK is enriched with VITAMIN D by Ultra-violet Light, Provides Important New Benefits

MILK has always been your best food. It contains more of the nutrients needed by the body than any other product you can buy. That is why physicians, dietitians, and nutritionists have for many years advised a quart per day for every child; and why they say adults should drink at least a pint daily.

Now this remarkably fine food has been made more nearly perfect still. In our dairy we now irradiated milk — expose it to ultra-violet light—and thus greatly enrich it with the sunshine Vitamin D. This vitamin is often called "the bone and tooth builder".

### Needed by Children

Vitamin D is highly important for infants and growing children. It helps make bones straight and strong. It is necessary in forming and protecting sound teeth. Lack of enough Vitamin D may result in rickets which may cause bow-legs, knock-knees, pigeon breast, other deformities, and soft or poorly formed teeth.

Rickets can usually be prevented in normal infants and children by serving 2½ to 3 glasses

of Irradiated Vitamin D Milk daily, together with enough other wholesome foods.

### Protection in Motherhood

You have heard the saying about mothers that "For every child, a tooth is lost". Tooth trouble during motherhood can often be traced to the lack of enough Vitamin D, calcium and phosphorus in the diet. Then, in order to provide for the baby's needs, Nature is forced to drain minerals from the mother's teeth...The Vitamin D in Irradiated Milk helps the mother's body to absorb more of the necessary minerals. Thus, it aids in protecting the mother's teeth, and helps to assure better nourishment for her baby...Consult your doctor about the benefits of Irradiated Vitamin D Milk.



Irradiated Vitamin D Milk tastes so good!—just like the finest milk you ever drank. And provides your family with important protective benefits.

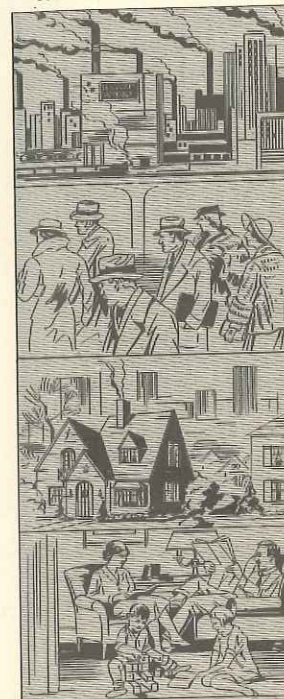
### For Every Member of the Family

Irradiated Vitamin D Milk is good for everyone. No other food is so nearly perfect. Very few foods are so economical. Serve Irradiated Milk regularly. Cook with it too — for cooking does not destroy Vitamin D.

**DRINK IRRADIATED VITAMIN D MILK DAILY. A DEPENDABLE YEAR-ROUND SUPPLY OF THE SUNSHINE VITAMIN D FOR EVERYONE**

Much of the sun's ultra-violet light, which should create Vitamin D in our bodies, is obstructed by civilization's barriers. Irradiated Vitamin D Milk is dependable, always gives your family rich amounts of "sunshine" Vitamin D.

### MODERN LIFE STOPS SUN'S BENEFITS



Smoke, soot, and clouds obstruct the sun's ultra-violet rays.

Clothes shut out the Vitamin-D-creating light.

Walls, roofs and window glass keep out the sun's Vitamin D benefits.

We work, study, live and play indoors, where there is no ultra-violet light.

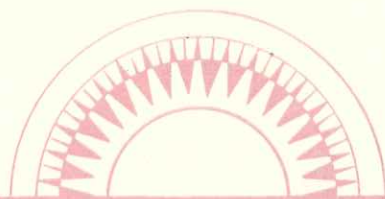
Such conditions, as shown above, rob us of the benefits of the sun's ultra-violet light which nature intended as the principal source of the bone and tooth-nourishing Vitamin D. Irradiated Milk supplies Vitamin D the year round with unchanging regularity, as a pleasant, delicious food for young and old. Use it daily.

Printed in U. S. A.



BRIEF EXCERPTS  
*from*  
SCIENTIFIC LITERATURE

*Irradiated*  
VITAMIN "D"  
MILKS



*Steenbock Process*

WISCONSIN ALUMNI RESEARCH FOUNDATION

# Irradiated Fluid and Evaporated Milks are Dependable Sources of Vitamin D

Vitamin D  
Value of  
Sunlight  
on  
**June 15**

● **SUMMER** . . . Sun's ultra-violet light creates bone and tooth nourishing Vitamin D if the body is exposed to pure sunlight. No Vitamin D formed on cloudy or rainy days, when indoors, in shade, nor when air is smoky. Irradiated milks always provide a uniform and dependable supply of Vitamin D.

Loss of  
Vitamin D Value  
of Sunlight  
**September 15**  
Only 43.3% as much  
Ultra-Violet Light  
as on June 15

● **AUTUMN** . . . Sun's Vitamin D creating rays are less than half as strong as on June 15. Days are shorter. Children are indoors more—at home and at school. Less Vitamin D formed by sunlight; therefore, greater need for Irradiated Vitamin D Milk.

Loss of  
Vitamin D Value  
of Sunlight  
**December 15**  
Only 12% as much  
Ultra-Violet Light  
as on June 15

● **WINTER** . . . . . Greatest need for Irradiated Vitamin D Milk. Sunlight is less than  $\frac{1}{8}$  as effective as on June 15. Shortest days of the year. Cold weather keeps family indoors. Very little Vitamin D formed in the body. Irradiated Vitamin D Milk supplies abundant Vitamin D regularly.

Loss of  
Vitamin D Creating  
Rays of Sunlight  
**March 15**  
Only 38.8% as much  
Ultra-Violet Light  
as on June 15

● **SPRING** . . . . . Sun's ultra-violet rays still weak—only about  $\frac{3}{8}$  as strong as on June 15. Cool, cloudy, unpleasant weather interferes with outdoor recreation. Children indoors in school or at home. Irradiated Milk is a pleasant and **DEPENDABLE** source of Vitamin D.

Based on Laurens — "Physiological Effects of Radiant Energy", p. 44. Data applies specifically to Baltimore, Md., generally to other cities.

## Index to Brief Excerpts

Following are excerpts from reports by recognized authorities on the values of Irradiated Vitamin D Milks.

For the reader's convenience these excerpts have been classified under ten headings, as follows:

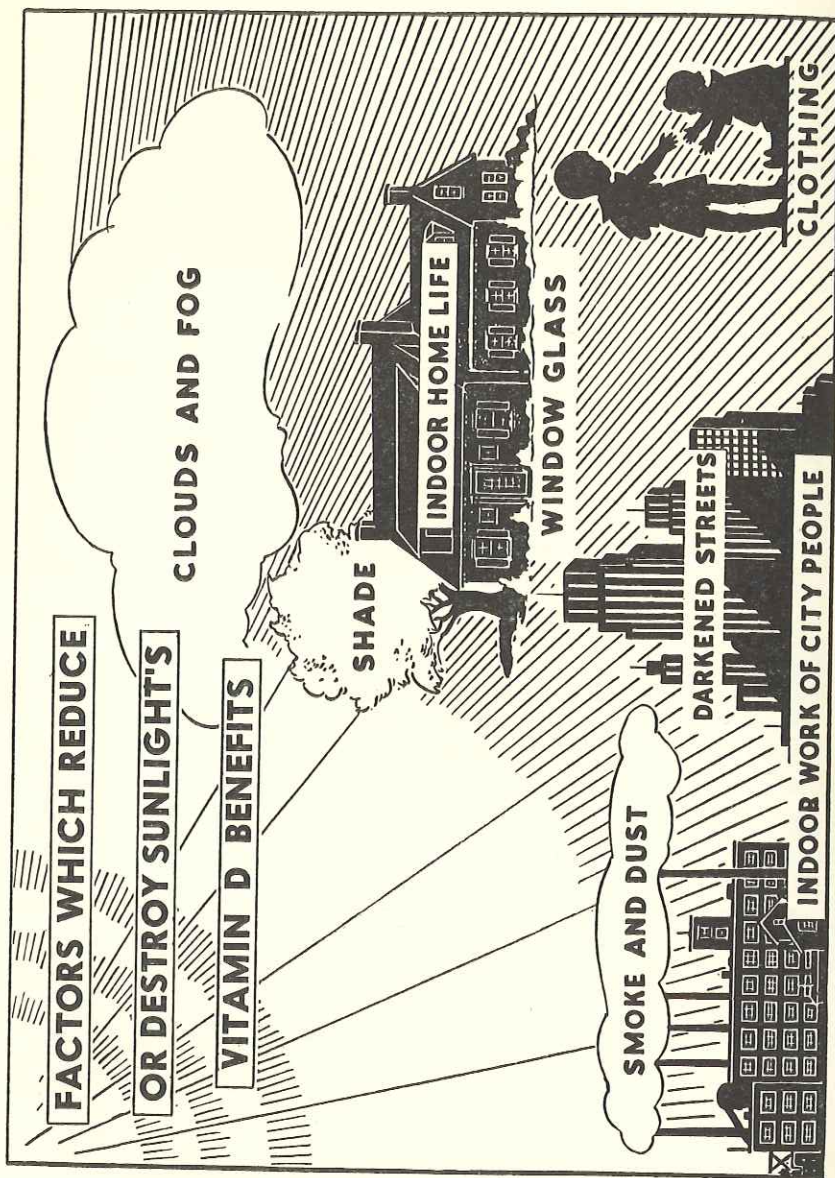
Factors Which Reduce or Destroy Sunlight's Vitamin D Benefits . . . . .	Page 4
Lack of Vitamin D in Common Foods . . . . .	Pages 5-6
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Prevalence of Rickets . . . . .	Pages 9-10
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### WISCONSIN ALUMNI RESEARCH FOUNDATION Madison, Wisconsin

Administrators of the Steenbock Process for enriching milk and other products with Vitamin D through irradiation with ultra-violet light. (U. S. Patent No. 1680818)

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WISCONSIN ALUMNI RESEARCH FOUNDATION  
MADISON, WISCONSIN





## Lack of Vitamin D in Common Foods

Foods	Vitamins →	A	B	C	D
<i>Vegetables</i>					
Asparagus .....		++	+++	.....	.....
Beans, Kidney (canned) .....		+	+++	.....	.....
Beans, Navy (cooked) .....		+	+++	.....	.....
Beans (lima) .....		+	+++	+	.....
Beans, String (cooked) .....		++	++	.....	.....
Beans, Soy (cooked) .....		+	+++	.....	.....
Beets (root) .....		+	+	+	.....
Brussels Sprouts .....		++	+++	+	.....
Cabbage (raw) .....		++	+++	+++	.....
Cabbage (cooked) .....		+	++	+	.....
Carrots (fresh raw) .....		+++	++	+	.....
Carrots (cooked) .....		++	++	+	.....
Cauliflower .....		+	++	+	.....
Celery .....		+	+	.....	.....
Chard .....		++	+	.....	.....
Corn (fresh—yellow) .....		++	++	+	.....
Cucumber .....		+	+	++	.....
Dandelion Greens (cooked) .....		++	++	+	.....
Lettuce .....		++	++	+++	.....
Onions (raw) .....		+	++	++	.....
Parsnips .....		+	++	.....	.....
Peas (cooked) .....		++	++	+++	.....
Potatoes, Sweet (cooked) .....		++	++	+	.....
Potatoes, White (baked) .....		+	++	+	.....
Radishes .....		.....	++	++	.....
Rhubarb (cooked) .....		.....	.....	+	.....
Rutabagas .....		+	++	++	.....
Spinach (cooked) .....		++	+++	+	.....
Squash (cooked) .....		++	.....	.....	.....
Turnip (cooked) .....		+	++	++	.....
Turnip Greens (cooked) .....		+++	++	+	.....
<i>Meats—Fish</i>					
Fish (average) .....		+	+	.....	tr
Kidney (beef) .....		++	++	+	.....
Liver (beef-pig) .....		++	++	.....	.....
Meat (average) .....		+	++	+	.....
Oysters (raw) .....		++	++	+	tr
Sweetbreads .....		+	+	.....	.....



Foods	→ Vitamins	A	B	C	D
<i>Fruits</i>					
Almonds .....		+	++	.....	.....
Apples (raw) .....		+	+	+	.....
Bananas (raw) .....		++	+	++	.....
Cantaloupe .....		++	++	++	.....
Cranberries (cooked 3 min. unstirred) .....		+	.....	+++	.....
Grapefruit .....		+	++	+++	.....
Grapes .....		+	++	+	.....
Lemon Juice (fresh) .....		+	++	+++	.....
Orange Juice (fresh) .....		++	++	+++	.....
Pears .....		+	+	+	.....
Pineapple (fresh or canned) .....		++	++	++	.....
Prunes (dried) .....		+++	++	.....	.....
Raisins .....		.....	+	.....	.....
Raspberries (fresh) .....		.....	.....	++	.....
Tomatoes .....		++	+++	+++	.....
<i>Dairy Products</i>					
Butter .....		+++	.....	.....	+v
Buttermilk .....		+	++	+	.....
Cheese .....		++	+	.....	.....
Eggs (yolk) .....		+++	++	.....	+v
Milk .....		+++	++	+	+v
Metabolized Vitamin-D Milk .....		+++	++	+	+++
Irradiated Vitamin-D Milk .....		+++	++	+	+++
Irradiated Evaporated Milk .....		+++	++	+	+++
<i>Grain Products</i>					
Barley (pearled) .....		+	++	.....	.....
Oatmeal (cooked) .....		+	++	.....	.....
Rice, Whole (cooked) .....		.....	++	.....	.....
Rye Bread .....		+	++	.....	.....
Bread (white) .....		+	+	.....	.....
Wheat Bread (brown) .....		+	++	.....	.....
Wheat Flour, Vitamin-D Enriched .....		.....	+	.....	+++
Oatmeal, Vitamin-D Enriched .....		+	++	.....	+
Farina, Vitamin-D Enriched .....		+	+	.....	+++
<i>Fats and Oils</i>					
Lard or Olive Oil .....		+	.....	.....	.....
Margarine, Oleo .....		+	.....	.....	.....
Cod Liver Oil, and other fish oils .....		+++	.....	.....	+++

This Composite Chart is compiled from the most authoritative sources available.  
 (1) Vitamin values obtained by biological tests.

## Scarcity of Vitamin D

HERE is, of course, abundant evidence that infants and very young children need extra vitamin D. . . . It seems to the Council to be in the interests of the public as a whole to recognize and accept the fortification of food with vitamin D. . . . Of all the common foods available, milk is the most suitable as a carrier of added vitamin D.

Council on Foods, American Medical Association, *Journal of American Medical Association*, January 16, 1937.

IN urban centers the sunshine is markedly reduced by shadows from buildings and by the smoke and dust in the atmosphere. In the temperate zone, inclement weather for many months each year interferes with the exposure of the body to the sun's rays. In addition, during the winter months the vitamin D value of the sun's rays is markedly reduced, owing to the low altitude of the sun above the horizon.

F. F. Tisdall, *American Journal of Diseases of Children*, March, 1933.

FEW human beings in large Northern cities obtain any substantial amount of sunshine except possibly in summer. The main source of vitamin D must, therefore, come to the human being from exposure to ultra-violet rays, from natural sources of this vitamin or from extra vitamin D obtained through materials that have been enhanced in their vitamin D potency.

Editorial, *Journal of American Medical Association*, October 26, 1935.

ALL of the other vitamins are found in adequate amounts in the average diet; but vitamin D is limited. Our common foods, with the exception of egg yolk, and to a variable and slight degree, butter, cream, and milk, con-



tain practically none of it. Vegetables, fruits, meats, and cereals are all lacking in this factor.

**Ulysses Moore, M.D., and H. G. Dennis, M.D., Portland, Oregon, "Studies in Rickets" (Clinical Findings in 1,000 Private Patients), Reprinted from California and Western Medicine, Vol. 44, No. 4, page 288, April, 1936.**

**A**LONGER daily period of outdoor sunlight is needed in the winter months because the ultra-violet content is quite low in the winter time and the body is more highly protected with clothing. Outdoor sunlight is needed because the ordinary glass of our windows does not transmit the ultra-violet portion and therefore removes the so-called "Vita" region.

**Public Health Lecture by Dr. Charles Sheard. Given in Mayo Clinic Lobby, October 30, 1936. Published in Post-Bulletin, Rochester, Minnesota, October 30, 1936.**

**L**IMITED Distribution of D.—Vitamin D is thus much the most limited in distribution of all the known vitamins; cod liver oil, other fish oils, egg yolk and butter fat to a slight extent, being practically the only naturally occurring sources so far discovered. It is plain that many children must grow up and many men and women live from day to day with very little vitamin D in their food.

**Blunt and Cowan, "Ultra-violet Light and Vitamin D in Nutrition." University of Chicago Press, page 122.**

**T**HE antirachitic factor is characterized by its limited distribution in food. . . . The only source, in addition to cod liver oil, in which it has been found unequivocally and in amount which gives it importance as a food, is the yolk of egg.

**Hess. Rickets, Osteomalacia and Tetany, page 121.**

## Prevalence of Rickets

**F**ORTY per cent of 6,375 applicants for the Navy and Marine Corps at Portland failed to pass the physical examination.

Attention is called to the high percentage of rejections (approximately 39%) under the headings of deformities, defective teeth and flat feet. The primary causes for these defects were traceable to rickets and malnutrition in childhood. The pediatricians have a very big task before them to diagnose and correct these two conditions.

**Walter M. Anderson, M.D., Lieut. Comm. Medical Corps, United States Navy: "Physical Unfitness." Northwest Medicine XXV:28 (Jan.), 1926.**

**I**N a recent investigation concerning the incidence of rickets among infants enrolled in various health stations in New York City, it was found that 50 to 60 per cent of them showed clinical evidence of this disorder during the winter months. Severe rickets were noted in 10 per cent of the white and 20 per cent of the colored infants. It is evident, therefore, that the eradication of rickets is still a major health problem.

**J. M. Lewis, M.D., New York City, "Clinical Experience with Vitamin D Milks," New York State Journal of Medicine, Vol. 34, No. 15, pp. 685-688, Aug. 1, 1934.**

**R**ICKETS is the most common nutritional disease occurring among the children of the temperate zone. Fully three-fourths of the infants in the great cities, such as New York, show rachitic signs of some degree. These statistics were based mainly on clinical rather than on laboratory examinations, more particularly on the presence of beading of the ribs.

**A. F. Hess: "Rickets, Osteomalacia and Tetany," page 41.**



**T**HREE hundred and forty-nine infants were examined during the month of October. Of these infants 17.4 per cent, or approximately 1 in every 6, showed some evidence of rickets. From this it can be concluded that exposure to summer sunshine as it is now usually being carried out in Toronto is not entirely efficacious in preventing the development of rickets as evidenced by X-rays.

**T. G. H. Drake, M.B., Frederick F. Tisdall, M.D., and Alan Brown, M.D., Canadian Med. Assn. Jour., Vol. 31, No. 4, Oct., 1934.**

**I**T is natural to wonder whether this might not be the best method to prevent rickets, to do away with rickets as a communal disorder. If all the milk for infants could be satisfactorily irradiated there would be few, or very mild, cases of rickets.

**A. F. Hess: "A Consideration of the New Antirachitic Agents." Soc. Trans. Amer. Jour. Dis. Child., Vol. 41, No. 2, Feb., 1931.**

**I**NFANTS under 4 months of age in October are more apt to develop rickets in the succeeding five winter months than are infants from 4 to 8 months of age in October.

**Drake, Tisdall, Brown, Canadian Med. Assn. Jour., Vol. 31, No. 4, Oct., 1934.**

**O**N account of the high incidence percentage of rickets, the importance of a means of prophylaxis and prevention of the disorder has become of public health interest. It has been shown that from fifty to seventy-five percent of infants suffer from some degree of rickets, while some authorities even go so far as to place the percentage at eighty-nine.

**A. F. Hess and L. J. Unger—McCullum and Simmonds. "The Newer Knowledge of Nutrition." 1925. American Journal of Dis. Children. XXIV, 327, 1922.**

## General Comments on Irradiated Milk and Vitamin D

**O**F all the common foods available, milk is the most suitable as a carrier of added vitamin D. Vitamin D is concerned with the utilization of calcium and phosphorus, of which milk is an excellent source.

**Council on Foods, Journal of American Medical Association: "The Present Status of Vitamin D Milk," Vol. 108, No. 3, page 206, January 16, 1937.**

**I**T is also essential to keep in mind a third principle of importance in nutrition—that of obtaining daily a sufficient amount of vitamin D. Innumerable biologic tests have proved the importance of this vitamin for sound bone and tooth formation.

**E. V. McCollum, Ph.D., Sc.D.: "Building Resistance and Prolonging Life," No. 3.**

**A**LL forms of vitamin D milk which stand accepted by the Council may be said to aid in the proper development of bones and teeth. Indeed, vitamin D milk possibly has a greater usefulness for the child than for the infant because of the larger proportion of children than of infants who do not receive vitamin D from special sources.

**Council on Foods, Journal of American Medical Association: "The Present Status of Vitamin D Milk," Vol. 108, No. 3, page 206, January 16, 1937.**

**C**URRENT agreement appears to favor the view that vitamin D in general is particularly effective as an anti-rachitic agent.

**Editorial: "Milk Constituents and the Effectiveness of Vitamin D," Journal A. M. A., Vol. 107, No. 3, page 214, July 18, 1936.**



**M**ORE recent investigations of activated milks indicate that milk irradiated directly is superior to cod liver oil when fed in amounts providing the same number of "rat units." One suggestion for the enhanced antirachitic value of irradiated milk attributes peculiar efficacy to the protein-sterol combination that has been demonstrated in milk. . . . It has been suggested that the antirachitic factors from different sources are not identical.

**Editorial—JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, March 23, 1935.**

**A** LARGE amount of evidence now consistently indicates that this idea (the enrichment of milk with vitamin D) is scientifically and economically sound, and so distinctly to the advantage of the public health as to be worthy of enlargement and practical attention even during the period when some of the methods of official control still remain to be developed.

**Sherman, American Journal of Public Health, October, 1933.**

**T**HE total amount of easily recognizable rickets found within the last year, in this preschool group of children, declined from 13.7 per cent in 1933 to 7.1 per cent in 1935. Mild rickets also dropped from 10.4 per cent in 1933 to 5.3 per cent in 1935, and moderate rickets from 3.5 per cent to 1.8 per cent. Severe clinical rickets apparently began to yield to earlier preventive measures, as far back as 1932, with an incidence of 0.2 per cent in the preschool children routinely examined. It is interesting to note that the item of severe rickets reached 0.03 in 1935.

**Fred O. Tonney, M.D., F.A.P.H.A., "Vitamin D in Child Health," American Journal of Public Health, Vol. 26, No. 7, July, 1936.**

**T**HE influence of vitamin D upon the child's physical development is viewed from the standpoint of: (1) growth, (2) bone development, (3) tooth development, (4) posture, and (5) resistance to the infections . . .

Since the lime salts are the principal component of bone, and the size of the skeleton determines height and breadth, it follows, of necessity, that vitamin D and lime salts are essential to **growth . . .**

There are two requisites for the normal **development of bone**: (1) ample lime and phosphorus in the diet, and (2) sufficient vitamin D to assure their adequate absorption . . .

With respect to **tooth development**, vitamin D and lime salts in adequate amounts are both admittedly essential . . .

The point is, that a healthy child naturally assumes a **correct posture**, whereas a rachitic child, because of lax muscle tonus and faulty bone development, often stamps himself as abnormal by his posture alone.

It has long been observed by pediatricians that children with rickets, even of minor degree, are **more than ordinarily subject to the common infections** of childhood.

The latest of the generally applicable antirachitic agents is vitamin D milk, produced by three processes—irradiation, fortification with a concentrate, and the feeding of irradiated yeast to cattle. Its potential usefulness toward solving the public health problem of rickets cannot as yet be judged. However, Table II, based on the easily recognizable symptoms and marks of rickets in the preschool group of children in Chicago, examined routinely year by year in the infant welfare stations from 1926 to 1935, inclusive, shows a decided decrease in rickets . . .

**Fred O. Tonney, M.D., F.A.P.H.A., "Vitamin D in Child Health," American Journal of Public Health, Vol. 26, No. 7, July, 1936.**



**M**RS. MELLANBY'S researches for the Medical Research Council have shown that the antirachitic potency of milk is greatly increased when such milk is irradiated. . . . It may contain more beneficial factors than vitamin D alone. No unfavorable results from the use of irradiated milk have been learned from its extended use for several years.

**Watson, Chalmers, "The Vital Factor in Diet; Theory of Nature of Vitamins," Edinburgh Medical Journal. (Trans. M. Chir. Soc.) 38, 91, June, 1931.**

**B**EGINNING with a consideration of irradiated milk, it should be emphasized that this therapeutic agent has two inherent advantages. First, in that milk is the essential food for all infants, the indispensable and basal article of diet throughout the rachitic age, and furthermore in that, owing to its unequalled content of calcium and phosphorus, it is outstanding in connection with calcification. At the outset it should be mentioned that there does not seem to be any danger of giving excessive doses of any of these antirachitic preparations to the growing child. A series of recent biologic tests showed that 10,000 or 15,000 times the therapeutic dose of any of these five preparations could be fed to young rats without bringing about hyper-calcemia; for this purpose, of course, concentrates had to be prepared. Irradiated milk also has the advantage of being inexpensive.

**A. F. Hess: "Antirachitic Activity of Irradiated Cholesterol, Ergosterol and Allied Substances," Journal A.M.A. 89:337, July 30, 1927.**

**I**N other words, the infants were about 1½ to 6 months of age, somewhat over 100 being selected from two baby health clinics of the department of health of New York. . . . The babies took about 24 to 32 ounces (750 to 1,000 c.c.) of milk a day, which was supplemented by cereal and vegetables for the older group. A quart, or even less, of this milk suffices to protect infants from rickets, notwithstanding

the fact that this quantity contains only 50 units\* of vitamin D as assayed by the standard rat technic.

\*(135 U.S.P. units.)

**A. F. Hess, M. D., and J. M. Lewis, M. D., New York: "Milk Irradiated by the Carbon Arc Lamp"—Journal of the American Medical Association, Aug. 20, 1932.**

**I**T has only been found possible up to the present time to demonstrate the differences between these two fats (butter fat and cod liver oil) by using diets poor in calcium with the low intake of this element there is a correspondingly high requirement of the substance we have spoken of (vitamin D) as a calcium depositing factor, but which is more than this. It exerts a distinct influence on the anatomic elements of the growing bone and enables the osteoblasts to form approximately the optimum amount of osteoid tissue. It leads to the deposition of calcium phosphate in a degree which is not possible in its absence when the calcium content of the diet is very low.

**(Sherman, The Vitamins, pp. 294-5.)**

**S**OCIETY must measure its well-being in terms of the health of its children. Since the foundations of physical well-being are laid in early infancy, the importance of an adequate diet for the baby and young child cannot be too strongly emphasized.

Vitamins A and D are perhaps the two most important in planning the diet of the growing child. Vitamin A, which is supplied abundantly in such foods as whole milk, butter, egg yolk, spinach and carrots, is more directly related to resistance of infection than any other food factor of which medical science is aware.

The importance of vitamin D has been the subject of considerable recent study. This vitamin controls, probably absolutely, the calcification of bones and teeth. In other words, it is necessary for sound bone and tooth forma-



tion in the young body as it develops. Summer sunshine is the most potent source of vitamin D, hence its name the "sunshine vitamin." Cod liver oil is the only other important source furnished by nature.

**E. V. McCollum. "Safeguarding the Growing Child." No. 5.**

**P**ASTEURIZED milk was activated by means of carbon arc rays, the radiant energy being carefully controlled and measured. It was found that a few seconds' exposure was sufficient to render the milk highly antirachitic.

A clinical test of this product in the prevention and cure of infantile rickets demonstrated that it is a highly effective antirachitic agent which can be relied on. Less than one quart daily sufficed to protect Negro infants.

The great advantage of using activated milk, both fluid and dry, in the prophylaxis of rickets is that this measure furnishes an automatic method of therapy and likewise provides calcium and phosphorus.

**A. F. Hess, M. D., and J. M. Lewis, M. D., New York: "Milk Irradiated by the Carbon Arc Lamp"—A Clinical and Laboratory Study of Rickets.**

**V**ITAMIN D is essential for the proper development of the bones and teeth and the prevention of rickets. In the absence of vitamin D it is difficult for the bones to secure from the blood stream the calcium and phosphorus necessary to calcification. Bow-legs are often noticed but more serious are the misshapen jaws, contracted thorax and pelvis which are not as easily outgrown. Rachitic children are especially susceptible to decaying and protruding teeth and, what is even more serious a menace to health, to bronchitis, pneumonia and other disturbances of the respiratory tract.

**"Feeding the Family," by Dr. Mary Swartz Rose, 3rd Edition, Page 32.**

## The Antirachitic Value of Irradiated Evaporated Milk in Infants

**S**INCE all the irradiated milk used came from one pooled batch, the constancy of vitamin D content from can to can was assured. Furthermore, assay of the milk at the beginning and end of the study indicated that there was no appreciable change in the vitamin D content during the four-month period covered by the investigation. The evaporated milk which was not subjected to ultra-violet irradiation was used for preliminary feeding as will be described. This nonirradiated milk showed approximately 30 U.S.P. units per can.

The infants were all negroes. They were selected because of their greater susceptibility to rickets.

The infants were all under five months of age at the beginning of the study.

The age limit was chosen because it was felt that infants in this age period were growing actively and were highly susceptible to rickets.

As far as possible the attempt was made to select infants who were free from rickets. This was not entirely possible, and five had a mild degree of rickets at the beginning of the study.

The study was carried out during the winter and spring from January 2, 1934, to May 15, 1934, thereby minimizing any slight antirachitic effect of the sunlight coming through the glass windows of the ward in which the infants were kept.



All of the infants were hospitalized during the entire period of the study. We believe that more careful observation of the progress of the infants, more accurate records of actual intake of milk, and the better elimination of other factors which might exert an antirachitic effect are assured on the hospital ward than in the out-patient clinics. Furthermore, balance studies of calcium and phosphorus are obviously impossible with out-patients.

From the evidence presented in Table III, irradiated evaporated milk containing 125 U.S.P. units of vitamin D per 14.5 ounce can appeared to be an adequate agent for the prevention of rickets in infants.

A study is recorded of the antirachitic value of irradiated evaporated milk, containing 125 U.S.P. units of vitamin D per 14.5 ounce can, in twenty-three male negro infants. This milk appeared to be an adequate agent for the prevention of rickets in negro infants.

**Rapaport, Milton, M. D.; Stokes, Joseph, Jr., M. D.; Whipple, Dorothy V., M. D.; Children's Hospital, Philadelphia; "The Antirachitic Value of Irradiated Evaporated Milk in Infants," Journal of Pediatrics, June, 1935.**

**T**HE antirachitic effect of irradiated evaporated milk was observed on 103 rapidly growing infants, aged one to six months at the initial examination . . . the entire milk requirements of these infants were supplied by irradiated evaporated milk, and no other source of vitamin D was administered. "Moderate" or "marked rickets" as shown by X-ray examination did not develop in a single infant.

**Drake, Tisdall, and Brown: "Irradiated Evaporated Milk in the Prevention of Rickets." Jour. of Pediatrics, Feb., 1936.**

**F**ROM the results obtained in this study, it seems reasonable to conclude that in irradiated evaporated milk containing 3.8 (125 U.S.P. units per 14.5 ounce can) Steenbock units to the ounce, we have an inexpensive, pleasant-tasting, convenient source of vitamin D, which is almost universally available and which, when fed to the average normal infant in the average or below average home in this latitude, will protect about nine out of ten such infants from rickets. It thereby offers a source of vitamin D in an amount sufficient to greatly reduce the incidence or severity of rickets among patients whose parents either have not been educated to the necessity of antirachitic supplements to the food of all babies or who cannot afford them.

The impression is gained, however, that the irradiation of evaporated milk as yet should not be relied on exclusively to provide protection to all infants throughout the first year. It should be supplemented with additional vitamin D units from one of the conventional sources, particularly in the early months of life, when the intake of irradiated evaporated milk may be insufficient to provide the unitage necessary to protect the infant.

**Strong, Naef, and Harper: "The Antirachitic Properties of Irradiated Evaporated Milk Fed to Normal Babies Under Home Conditions." Jour. of Pediatrics, 7, 1, 21, July, 1935.**



## Irradiated Milk in the Prevention of Rickets

**T**HE value of vitamin D milk for infants and growing children is a real one. Unfortified milk is not reliable as a preventative of rickets. . . . Vitamin D milk is convenient and efficacious.

**Dr. J. W. M. Bunker, Massachusetts Institute of Technology. Address before Annual Meeting of the American Dietetic Association, Boston, October, 1936.**

**T**HE author is, therefore, of the opinion that in most instances 16 oz. of irradiated milk would suffice to protect infants against rickets. The average artificially fed baby receives approximately 16 to 18 oz. of milk at three to four weeks of age, 20 to 22 oz. of milk at two months, and about 24 oz. at three months of age. Since rickets are rarely manifested in full-term infants under two months of age, even though they receive no antirachitic therapy, it is evident that infants who are given irradiated milk from the time they are born would adequately be protected against this nutritional disorder.

**J. M. Lewis, M.D., New York City, "Clinical Experience with Vitamin D Milks," New York State Journal of Medicine, Vol. 34, No. 15, pages 685-688, Aug. 1, 1934.**

**I**F all artificially fed infants were given vitamin D milk, rickets would indeed become a rare disorder.

**J. M. Lewis, M.D., New York City, "Clinical Experience with Vitamin D Milks," New York State Journal of Medicine, Vol. 34, No. 15, pages 685-688, Aug. 1, 1934.**

**I**RRADIATED milk seems to be the most desirable antirachitic for prevention on a communal scale. Only 20 to 24 ounces daily is needed to assure protection. This therapeutic agent has the advantage of being automatic and inexpensive and of providing calcium and phosphorus as well as the antirachitic factor.

**A. F. Hess, M.D., and J. M. Lewis, M.D., New York, "An Appraisal of Antirachitics in Terms of Rat and Clinical Units." Jour. A.M.A., July 15, 1933.**

**F**OR the past two winters clinical tests have been carried out in the clinics of the department of health of New York City, and it was established unequivocally that irradiated milk is able to prevent rickets, indeed, even in the negro infant.

**(Jour. A.M.A., Vol. 101, No. 3, July 15, 1933.)**

**I**T has been shown that markedly rachitic infants who were treated in the wards of the University and Children's Hospitals with irradiated milk as the only antirachitic agent responded with prompt healing in each instance.

**Mitchell, Eiman, Whipple and Stokes, Amer. Jour. Pub. Health, Dec., 1932.**

**R**ESARCHES have clearly confirmed the value of irradiated milk in the treatment of rickets.

**T. Y. Finlay, C. Watson, and J. B. King: "The Therapeutical Value of Irradiated Milk in the Treatment of Rickets." (1930)**



**A** QUART, or even less, of this milk suffices to protect infants from rickets, notwithstanding the fact that this quantity contains only 50 units\* of vitamin D as assayed by the standard rat technic.

\*50 Steenbock units or 135 U.S.P. units of vitamin D.

**(Hess, A. F., and Lewis, J. M., Milk Irradiated by the Carbon Arc Lamp, Jour. A.M.A., Vol. 99, No. 8, Aug. 20, 1932.)**

**M**ILK is of particular interest because of its unrivaled content of calcium and phosphorus—the adjuvants of a properly planned antirachitic regimen. It is gratifying to learn through the recent communication of A. F. Hess and his co-workers \*that fluid milk can now be successfully activated at almost insignificant cost, that it retains its antirachitic potency after drying, and that both the fluid and the dried products have been extensively tested on children with satisfactory outcome.

\*Hess & Lewis: Milk Irradiated by the Carbon Arc Lamp, J. A. M. A. 99: 647 (Aug. 20) 1932.

**The Journal of the American Medical Association, Nov. 26, 1932.**

**T**HE administration of 20 to 40 ounces daily of irradiated vitamin D milk over a period of five winter months to 141 Toronto infants, largely of British and Northern European descent, 47 of whom were under 4 months of age at the initial examination, and 94 from 4 to 8 months, prevented the development of moderate or marked rickets, as shown by X-rays of the forearms, in every instance.

**T. G. H. Drake, M.B., Frederick F. Tisdall, M.D., and Alan Brown, M.D., Canadian Med. Assn. Jour., Vol. 31, No. 4, Oct., 1934.**

**I**F all the milk for infants could be satisfactorily irradiated, there would be few, or very mild, cases of rickets.

**(Hess: Soc. Proc. Amer. Jour. Dis. Child., Vol. 41, No. 2, Feb., 1931.)**

**A**CTIVATED milk, in the fluid or dry form, possesses the advantages not only of providing an automatic method of preventing rickets and of supplying this essential factor in a medium rich in phosphorus and calcium, but, as has been shown, it accomplishes this end by means of an exceptionally small amount of the antirachitic factor. In view of these important advantages I do not hesitate to recommend the general use of such milk for infants and children, especially in large communities.

**Dr. Alfred F. Hess, American Journal of Public Health, Vol. xxii, No. 12, December, 1932.**

**W**E believe that the great value of irradiated vitamin D milk lies in the automatic and regular administration of vitamin D when given in this manner. However, because the young infant is more susceptible to rickets than the older infant or child, and taking into consideration the fact that the small infant consumes less milk, and consequently less vitamin D, we feel it is desirable during the early months of life to supplement the vitamin D administered in the form of vitamin D milk with some other antirachitic substance.

**T. G. H. Drake, M.B., Frederick F. Tisdall, M.D., and Alan Brown, M.D., Canadian Med. Assn. Jour., Vol. 31, No. 4, October, 1934.**

**I**N irradiated vitamin D milk we have a valuable addition to our present antirachitic armamentarium.

**T. G. H. Drake, M.B., Frederick F. Tisdall, M.D., and Alan Brown, M.D., Canadian Med. Assn. Jour., Vol. 31, No. 4, October, 1934.**



## Irradiated Milk Benefits During the Pre-natal and Nursing Periods

**M**OST children are born with normal mineral balance, since the prospective mother, if not sufficiently nourished in this respect, will draw on her reserve: the bones and teeth. During lactation, there is more of a mineral drain than during pregnancy; which accounts, in many instances, for rapid decay.

**"The Dentist in Group Medicine"**—Boyd S. Gardner, D.D.S., Rochester, Minn. Reprinted from the *Jour. of the American Dental Association*, Vol. XXI, pages 75-83, January, 1934.

**W**HEN the necessary ingredients for milk synthesis are lacking in the daily food, the mother may either decrease her milk output, secrete milk deficient in these constituents, or draw them from her own tissues.

Shukers, C. F., Macy, I. G., Nims, B., Donelson, E., and Hunscher, H., *Jour. Nutrition*, Vol. 5, No. 2, March, 1932.

**W**ITHOUT satisfactory prenatal nutrition the teeth of the child will be faulty.

McCullum, E. V., and Simmonds, Nina, *"Newer Knowledge of Nutrition,"* 4th Edition, page 272, 1929.

**M**ANY of the operative procedures incident to childbirth, which lead to the death or injury of mother or infant, are properly attributed to rachitic deformities of the pelvis.

A. F. Hess, *Rickets, Osteomalacia and Tetany*, pages 18-19, 1929.

**D**URING periods of pregnancy and lactation extra stress is placed on the calcium and phosphorus metabolism of the maternal organism. At these periods it is particularly necessary for the diet to be adequate, not only in calcium and phosphorus, but also in vitamin D, in order to insure the optimal utilization of these mineral elements by the mother.

Recent experimental work has shown that dental caries can be produced experimentally in animals by a diet inadequate in phosphorus and vitamin D, and, conversely, that the incidence of dental caries can be diminished by an adequate supply of phosphorus and vitamin D. From this it would appear that care should be exercised to assure an adequate supply of both phosphorus and vitamin D during the age periods at which dental caries is prevalent.

There is no evidence that many times the therapeutic amount of vitamin D can produce any harmful effects.

F. F. Tisdall, M. D., Toronto, Canada, *"Vitamin D,"* reprinted from the *American Journal of Diseases of Children*, March, 1933, Vol. 45, pp. 619-621.

**V**ITAMIN D milks should prove of great value in the prevention of osteomalacia (adult rickets). . . . According to Macy, the addition of vitamin D to the diet of lactating and pregnant mothers brings about an improvement in the calcium and phosphorus retention so that vitamin D might be prescribed with advantage to pregnant and lactating mothers. Mellanby and Hess, among others, are of the opinion that the lack of vitamin D is an important factor in the development of dental caries.

Vitamin D milk might be given with advantage from infancy to adolescence in order to bring about an optimal phosphorus and calcium retention during the growing period.

J. M. Lewis, M.D., New York City, *"Clinical Experience with Vitamin D Milks,"* *New York State Journal of Medicine*, Vol. 34, No. 15, pages 685-688, Aug. 1, 1934.



## Vitamin D—Its Relation to Dental Caries

**T**HERE is probably no disease so generally prevalent as dental caries. The incidence of decay among school children in the entire United States, according to the report of the White House Conference, is 95 per cent. Likewise, malocclusion in varying degrees has been found to be widely prevalent. . . . Whatever difference of views may be held by different students of the problem, almost all agree that a diet nutritionally adequate is essential for the making of good teeth. All advocate practically the same type of diet, that is, one containing milk, eggs, bulky vegetables, fruits and cod liver oil, or some other source of extra vitamin D.

**J. B. Stone, M.D., Richmond, Virginia, "Children's Teeth in Relation to Pediatric Practice," Southern Medical Journal, Vol. 29, No. 7, page 731.**

**S**O far as practical dietetic measures for the reduction of the incidence of caries are concerned it follows from these results that the ideal is to secure an adequate supply of vitamin D in the diet from an early age, beginning even in the prenatal period.

**The Lancet, "Vitamin D and the Teeth," Vol. II, No. 5, page 266, 1936.**

**T**HE old slogan "a clean tooth never decays" has had its day and with our present knowledge should be changed to "a clean tooth, well nourished and well exercised, cannot become diseased." Moreover, we can all benefit by McCollum's slogan "eat what you want after you have eaten what you should."

**"The Dentist in Group Medicine"—Boyd S. Gardner, D.D.S., Rochester, Minn. Reprinted from the Journal of the American Dental Association, Vol. XXI, pages 75-83, January, 1934.**

**T**HE final conclusion, strongly emphasized, is as follows: "The investigations described in this report show conclusively that a relatively high vitamin D content of the food can do much to diminish the incidence of caries if the vitamin is given during the development of the teeth; that a beneficial effect may be obtained if the vitamin is given at a fairly late stage of development; and that even when it is given after the eruption of the teeth, the onset and spread of caries is delayed."

**The Lancet, "Vitamin D and the Teeth," Vol. II, No. 5, page 266, 1936.**

**I**T is now well understood that dentist and physician alike must resort to reenforcement of diet, and, at the present time, calcium phosphate with vitamin D seems to be the most desirable agent. Such reenforcement is not necessary if the patient's diet contains vitamin D, with the necessary mineral content. Because American diets are so inadequate in these requirements, diets of patients who come to the dentist for treatment of their teeth will have to be corrected or reenforced. Experience in dealing with this problem has taught the dentist that it is better to start with reenforcement of diet and gradually discontinue it, if it is found that patients are willing to correct their dietary regimen.

**"The Dentist in Group Medicine"—Boyd S. Gardner, D.D.S., Rochester, Minn. Reprinted from the Journal of the American Dental Association, Vol. XXI, pages 75-83, January, 1934.**

**I**N man, the addition of vitamin D to diets previously considered adequate in all respects, including phosphorus, is an important factor in the prevention of dental caries.

**Agnew, Agnew, and Tisdall, Journal of Pediatrics, Vol. 11, No. 2, page 190, Feb., 1933.**



**T**O observe the effects of vitamin D on tooth decay, 162 children, ranging in age from 2 to 17 years, were under observation for a period of one year. They all received an excellent diet, including over a pint of milk daily, 1 ounce of butter, two or more vegetables, meat or eggs and fruit. This diet contains large amounts of calcium and phosphorus and is probably a better diet than that received by the average child. In addition, the children lived under healthful conditions, getting lots of sleep, fresh air and outdoor exercise.

The children were divided into two groups. The diet they were receiving was not changed in any way, but to the food of one group was merely added vitamin D.

The results showed that the group receiving the extra vitamin D had less than half as many cavities as the group without this necessary food factor. Tooth decay was cut in half.

**Conclusions from new research on Dental Caries, Department of Pediatrics, University of Toronto. "Diet Does It," by E. V. McCollum, Ph.D., Sc.D., School of Hygiene and Public Health, Johns Hopkins University.**

**T**HE essential point in all this work is the conclusion that although vitamin D is necessary in small infants for the prevention of rickets, it is also essential throughout the whole of life, in much smaller amounts, of course, than that required by the rapidly growing organism during the first year. In work concluded in the Toronto Laboratories, it has been shown that vitamin D in children nine to eleven years of age definitely is a factor in the optimal utilization of calcium and phosphorus. The literature of the decay of teeth, osteomalacia, etc., gives definite evidence that vitamin D is necessary throughout the whole of life.

**T. G. H. Drake, M.D., Paediatric Research Foundation.**

## **Toxicity Latitude of Irradiated Vitamin D Milk**

**F**ORTUNATELY, it is well known that there is a considerable factor of safety and that the toxic dose is hundreds or even thousands of times beyond the necessary dosage of such substance.

**Fishbein, "The Work of the Committee on Foods of the American Medical Association." The Journal of the American Medical Association, July 11, 1931, page 85.**

**T**HERE is no evidence that many times the therapeutic amount of vitamin D can produce any harmful effects.

**Tisdall, American Journal of Diseases of Children, March, 1931.**

. . . There need be little apprehension about the administration of amounts ranging up to 150,000 international units daily for indefinite periods.

**Based on a study of the administration of highly concentrated viosterol to 300 human subjects from 7 to 72 years of age. Reed, Journal of the American Medical Association, 1934 (102:1745).**

**K**LOSTER'S studies were undertaken to determine whether this observation was applicable to human beings. The people of the Vadso region do not cultivate corn, and only a few potatoes. They eat fish two or three times a day, and, in the busy fishing season, it is customary for an adult to consume every day about half a quart of "molje," a mix-



ture of liver and liver fat. When storms cut off the supply of fresh fish, salt or frozen fish is eaten, washed down with cod liver or other fish liver oil. In some of the poorest homes, fish is fried in cod liver oil, and during the six winter months, the average consumption of cod liver oil per day by each person is more than 1 ounce. Some adults drink as much as 300 c.c. of cod liver oil at a time. Babies begin to take cod liver oil when only 4 months old. Kloster was impressed by the excellent state of nutrition of these infants and of the young children in his district, yet they were living under conditions commonly considered unhealthy.

**"The Dentist in Group Medicine"—Boyd S. Gardner, D.D.S., Rochester, Minn. Reprinted from the Journal of the American Dental Association, Vol. XXI, pages 75-83, January, 1934.**

**T**HERE is evidently an enormous range of safety between prophylactic or therapeutic dosage and the quantities that are likely to do harm. The toxic (harmful) dose is probably 1,000 times the therapeutic (healing) dose of viosterol.

**Journal of the American Medical Association, 1931 (97:106).**

**I**N regard to the question of the possibility of toxic effects resulting from irradiated milk, it should be stated that no one has ever observed any untoward symptoms or hypercalcemia resulting from its administration.

Furthermore, feeding rats 10,000 times a therapeutic dose of irradiated milk for a period of months did not bring about any deleterious effects, or any abnormal histological changes in the tissue.

**J. M. Lewis, M. D., New York City, "Clinical Experience with Vitamin D Milks," New York State Journal of Medicine, Vol. 34, No. 15, pages 685-688, Aug. 1, 1934.**





**A FOUNDATION  
OF STRENGTH  
FOR THE FUTURE**

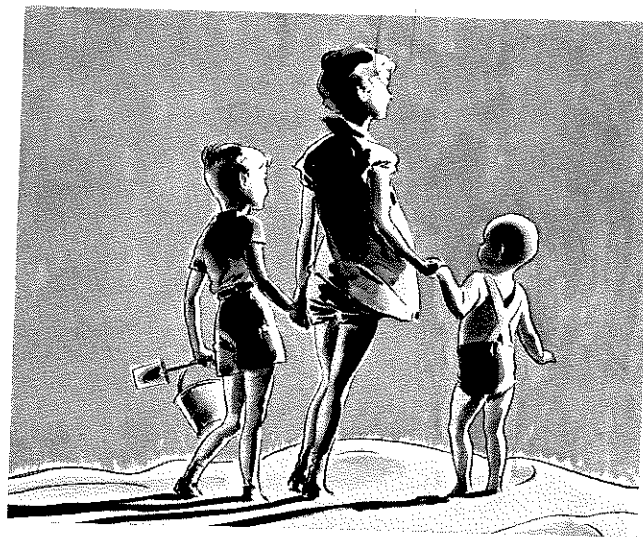
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to accept and administer, volun-  
tarily assigned patents and pat-  
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veloped at the University of  
Wisconsin. By continuous bio-  
logical assays, the public and  
professional confidence in accu-  
rately standardized Vitamin D  
is maintained. All net avails  
above operating costs are dedi-  
cated to scientific research.*



## A FOUNDATION OF STRENGTH FOR THE FUTURE

Your children! You see them out at play, faces flushed with eagerness of life. Soon—miraculously almost—they will “grow up.”

How your heart goes out to them! How you want to give them the heritage of health that is their right—to see them grow into vigorous young manhood and beautiful young womanhood. So much depends upon it—their whole futures, business and social, their happiness—yes, even their *lives* perhaps!





You know the value of fine, even teeth—the *priceless* value of a warm, winning smile.

You know the value of proper posture—a straight, upright carriage—the poise and assurance which radiate from the vibrant, inward glow of health.

More than anything you could leave your children—money, culture, position—they will thank you *most* for these priceless assets of health and beauty and charm. They cannot buy or bribe them from the years to come.

They can obtain them only *now*, while they are young.

*Now*, while their bones and teeth are forming, *now*, while they look—*must* look—to you for help, give them a foundation of strong, straight bones and fine, sound teeth—

#### **A FOUNDATION OF STRENGTH FOR ALL THEIR FUTURE LIVES!**

Some things are too important to leave to chance. This is one. To help you is the purpose of this little book. Its contents come to you with the sanction of many leading members of the medical profession; and it is sponsored by the Wisconsin Alumni Research Foundation.

Organized “not for profit,” the Foundation is the scientific research staff established to extend, widely and wisely, the benefits of the process discovered by Dr. Harry Steenbock of the University of Wisconsin—the process by which certain milks, cereals and other food substances and pharmaceuticals are *irradiated* to enrich them with Sunshine Vitamin D.

#### **THE NECESSITY OF VITAMIN D**

Sunshine Vitamin D! How important it is in the building of straight, sound bones and strong, even teeth! And how serious its deficiency may be . . . as proved by the fact that fully *one-half* of New York City babies display mild, moderate or marked evidence of improper bone development in the winter, a *national average!* An even larger number of colored children, especially in our Northern latitudes, develop a more or less pronounced condition of improper bone nourishment—due to lack of Sunshine Vitamin D.

Serious cases, if neglected, result in bow legs, knock-knees, soft, irregular teeth, “pigeon breast” and pelvic deformity. All because of Sunshine Vitamin D starvation.





Here is the reason: the minerals, calcium and phosphorus—upon which primarily depend the strength of bones and hardness of the teeth—cannot be used properly *except when enough Vitamin D is present in the body.*

Where and how may you obtain Vitamin D for your children? That, naturally, is your first thought—to help assure for *your* children a sound foundation of strength and health. The best normal source of Vitamin D should be the sun. Our ancient forbears regarded the sun as the source of life. And primitive man was largely right—for it was from the ultra-violet rays of the sun that he obtained the Vitamin D he needed to promote sound bone and tooth development. He was much in the sun; he wore little clothing to bar out these rays.

#### CIVILIZATION ROBS MANKIND OF SUNLIGHT

Now modern civilization has changed all that. Of the 127,000,000 people who live in the United States, fifty million live in cities of 25,000 or over. More than half the population lives in the northern half of the United States. From fall to early summer most of the healing effect of the sun's rays is lost, due to the oblique position of the sun. It is a known fact that in *winter* the Vitamin D effect of sunlight is only *one-eighth* as strong or as beneficial as in summer. To make it even worse, clouds, smoke, haze, dust and soot all halt these precious rays.



Clothing and even the clearest window glass stop them.

Consider, too, that even the most carefully selected diet of natural food fails to supply uniform and dependable amounts of Vitamin D. Fruits, vegetables, cereals and meats normally contain none. Eggs contain some but the amount is too small and too variable. Regular market milk provides very little, especially during the winter when Vitamin D is hardest to obtain, because the quality of sunlight is so poor.

So you see that you cannot rely upon the ultra-violet



rays of sunlight, or upon ordinary foods, to provide enough Vitamin D for *your* children's bodies. Physicians especially appreciate how general is the deficiency of Vitamin D—and the damage that may be caused by Sunshine Vitamin starvation.

What, then, can be done? What can *you* do to supply abundant Sunshine Vitamin D for *your* children?

### SCIENCE COMES TO THE RESCUE

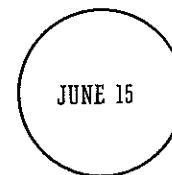
Fortunately, science has come to the rescue. Thanks to the Steenbock Process, the Vitamin D needed by growing bodies has been made available to everyone through *irradiation* in milk and in other foods . . . and in pharmaceuticals which your doctor can prescribe.

Irradiation means, simply, the exposure of certain food substances to ultra-violet rays, like those of natural sunlight. The result is to make these substances substantially more potent in the Sunshine Vitamin D.

Naturally, the Steenbock Process is patented. This is to protect the public from exploitation and to insure exact and dependable scientific control. Under the system of licenses issued by the Wisconsin Foundation, the right to manufacture and distribute irradiated Vitamin D products may be at once withdrawn, if licensees fail to maintain the established potency standards.

Only a limited number of food substances are enriched with Vitamin D by means of the Steenbock Irradiation Process. Among them are irradiated and metabolized

### HOW THE SUN'S RAYS DECLINE\*



JUNE 15

#### S U M M E R

Sun's ultra-violet light creates bone and tooth nourishing Vitamin D if body is exposed to pure sunlight.



SEPTEMBER 15

#### A U T U M N

Sun's Vitamin D creating rays less than half as strong as on June 15. Days shorter. Also, children more indoors—at home and at school.

#### W I N T E R

Greatest need for Irradiated Vitamin D products. Sunlight less than 1/4 as effective as on June 15.



DECEMBER 15

#### S P R I N G

Sun's ultra-violet rays still weak—only about 2/3 as strong as on June 15.



MARCH 15

\*Based on Laurens' "Physiological Effects of Radiant Energy," Page 44



fluid milks; irradiated evaporated, and powdered milks; yeast; cereals; flour; and pharmaceuticals prescribed by physicians everywhere; and milk drink accessory foods. These Foundation-licensed products have been selected with the greatest care. Only such products as can provide definite benefits are granted the right to use the Steenbock Process. The list at the back of this booklet is a reliable guide to Vitamin D products of merit. You can buy them with confidence.

*To identify these products quickly and surely at your druggist's or grocer's, look for the word "Irradiated" and the reference on the label to the Wisconsin Alumni Research Foundation. The list included in this booklet is meant to be helpful. Consult it before you buy. It is assurance of value for the money you pay.*

In the pharmaceutical field, Vitamin D by Irradiation under the Steenbock patent is called *Viosterol*, a name suggested by the American Medical Association and used by all of the co-licensees authorized by the Foundation to manufacture and distribute this product.

Viosterol is produced from a chemical substance which has been activated with Vitamin D by exposure to ultra-violet light in accordance with the Steenbock Irradiation patents. This patented process is employed by the five eminent pharmaceutical companies named later, who have been licensed by the Wisconsin Alumni Research Foundation. The activated substance is then dissolved in a bland vegetable oil so as to permit of accurate dosage. Viosterol, like all Foundation products, is standardized as

topotency. It contains more than 100 times the antirachitic (rickets-preventing) value of standardized cod liver oil. Viosterol is also combined with other carriers, as fortified cod liver oil and halibut liver oils and malt. Such pharmaceutical products are available on physicians prescriptions in liquid, capsule and in tablet form.

Pharmaceutical companies producing Viosterol and Viosterol products under the Steenbock patents are:

ABBOTT

MEAD JOHNSON

PARKE-DAVIS

SQUIBB

WINTHROP

Your family physician will suggest the individual products required—follow his advice! Give him your wholehearted support in the measures he prescribes to protect your family from this country's greatest diet deficiency—lack of Vitamin D.

Remember—the regular use of these Irradiated Vitamin D milks, foods and pharmaceuticals helps to insure, for your children, a firm foundation of straight, strong bones and fine, sound teeth for all their future lives.

To the mothers of America—to the children of America—these Irradiated products truly help to point the way to "A FOUNDATION OF STRENGTH FOR THE FUTURE!"



## ASK YOUR DRUGGIST, GROCER AND MILK MAN FOR THESE IRRADIATED PRODUCTS

You can identify Foundation-licensed products by the word "Irradiated" and by the reference on the label to the Wisconsin Alumni Research Foundation.

### IRRADIATED AND METABOLIZED VITAMIN D MILKS



Milk is the richest storehouse of the bone-building and tooth-forming minerals, calcium and phosphorus, which Vitamin D puts to work. Milk as ordinarily produced by the cow, however, contains amounts of Vitamin D too small and variable to insure the proper forming of bone and tooth structures in the young. Milk can, however, readily become an excellent carrier of Vitamin D. The Steenbock Irradiation Process is utilized in two ways for enriching fluid milk with Vitamin D:

#### IRRADIATED EVAPORATED MILK

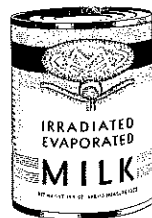
Briefly, Irradiated Evaporated Milk is pure, whole cow's milk concentrated by the removal of approximately 60 per cent of the water. It is irradiated with ultra-violet rays, to increase the Vitamin D content. Easy to digest, it is used widely, with excellent results, in infant feeding formulas. It is used, mixed with an equal amount of water, for every

*Irradiated* Vitamin D milk is produced by exposing the milk to ultra-violet rays.

*Metabolized* Vitamin D milk is produced by adding standardized irradiated yeast to the feed of milch cows. The Vitamin D is transmuted from the feed to the milk.

Rigid control through mechanical apparatus, records and biological assays assures the standard Vitamin D potencies of both Irradiated and Metabolized Vitamin D milks.

These milks are obtainable from several hundred dairies in many American and Canadian cities.



milk purpose, and is available at economical cost from all grocers. Look for the word Irradiated on the label. Available in every part of the United States and Canada and in many other countries.

## VITAMIN D ENRICHED FOODS



Cereal foods are logical carriers of Vitamin D. They are usually served with milk which supplies abundant calcium and phos-



phorus. Quaker Farina, Quaker and Mother's Oats, and Muffets Brand Whole Wheat Biscuits contain Vitamin D.

Sunfed Flour is, first of all, an excellent all-purpose family flour for home baking. Recently it has also been made available to commercial bakers and is made by them into Sunfed Bread. As bread is an integral part of the daily diet, regularity of intake is no problem. Bread made from Sunfed Flour carries approximately 250 U. S. P. units of Vitamin D per pound loaf, a valuable contribution to better nutrition.



Dryco is a special milk for babies, enriched with Vitamin D by irradiation. It is an excellent product for general use by infants, especially in remote areas where the fluid milk supply may not be properly safeguarded by sanitary methods.

Fleischmann's Irradiated Foil Yeast is often recommended not only for its Vitamin D content, but for the anti-neuritic vitamin B, and the anti-pellagic vitamin G (B2) which it provides.





Ovaltine is a pure food concentrate. It is an easily digested, rapidly absorbed, nutritious and protective food. It contains the vitamins A, B1, B2 (G), and D. The natural vitamin D content has been supplemented and standardized by the use of the Steenbock Irradiation Process.

For additional information write: WISCONSIN ALUMNI RESEARCH FOUNDATION, Madison, Wisconsin; IRRADIATED EVAPORATED MILK INSTITUTE, 307 North Michigan Avenue, Chicago—Irradiated Evaporated Milk; QUAKER OATS COMPANY, 141 West Jackson Boulevard, Chicago—Farina, Muffets, Quaker and Mother's Rolled Oats; COMMANDER-LARABEE CORPO-

RATION, Baker Arcade, Minneapolis—Sunfed Flour; Sunfed Bread; DRY MILK COMPANY, 350 Madison Avenue, New York City—Dryco; STANDARD BRANDS, Inc., 595 Madison Avenue, New York City—Metabolized Vitamin D Milk, Foil Yeast; THE WANDER COMPANY, 180 North Michigan Avenue, Chicago—Ovaltine.

#### VIOSTEROL AND OTHER VITAMIN D MEDICINALS

Viosterol is Vitamin D in standardized concentrated form, and is prescribed regularly by physicians not only in the treatment and prevention of rickets in infants, but for the protection of expectant and nursing mothers. It assists in forming the infant's bones and teeth with adequate calcium and phosphorus, thus promoting the development of strong, straight bones and hard,

decay-resistant teeth.

Viosterol is also used to increase the Vitamin D content of cod and halibut liver oils and other products in vials, capsules and tablets. These products are produced by five reliable, well-known pharmaceutical manufacturers who have been licensed to use the Steenbock Process by the Wisconsin Alumni Research Foundation.

#### FOLLOW YOUR FAMILY DOCTOR'S ADVICE

These Irradiated Vitamin D pharmaceutical products are generally prescribed by physicians, and readers of this little booklet are asked to follow their physicians' advice in their use.

**ABBOTT LABORATORIES**, North Chicago, Illinois—Viosterol in Oil; Cod Liver Oil with Viosterol; ABD Malt; Haliver Malt; Haliver Oil with Viosterol.

**MEAD JOHNSON & COMPANY**, Evansville, Indiana—Viosterol in Oil; Cod Liver Oil with Viosterol; Halibut Liver Oil with Viosterol.

**PARKE, DAVIS & COMPANY**, Detroit, Michigan—Viosterol in Oil; Cod Liver Oil with Viosterol; Haliver Oil with Viosterol; Irradol A; Irradol Malt.

**E. R. SQUIBB & SONS**, New Brunswick, New Jersey—Viosterol in Oil; Cod Liver Oil with Viosterol; Dicalcium Phosphate Compound with Viosterol; Halibut Liver Oil with Viosterol.

**WINTHROP CHEMICAL COMPANY**, 170 Varick Street, New York City—Viosterol in Oil; Drisdol.

★ ★ ★

#### WISCONSIN ALUMNI RESEARCH FOUNDATION ★

\*A corporation not for private profit . . . founded in 1925 . . . to accept and administer, voluntarily assigned patents and patentable scientific discoveries developed at the University of Wisconsin. By continuous biological assays, the public and professional confidence in accurately standardized Vitamin D is maintained. All net avails above operating costs are dedicated to scientific research.



## THE BEST FOOD

for every member of your family

● A quart of milk a day for every child . . . a pint a day for adults—that's been the recommendation of physicians, dietitians and nutritionists for many years. For milk contains a higher percentage of nutritional elements than any other food you can buy.

Wilson's Evaporated Milk is pure, whole cow's milk with 60 per cent of the water removed. It's safe, because it is sterilized after being sealed in the can. It is convenient because it requires no refrigeration until the can is opened. It is economical because its cost per unit of food value is usually less than any other whole milk available. And it is now even more nearly the perfect food, for it is *Irradiated*—enriched in Vitamin D by exposure to ultraviolet rays.

Make sure that Wilson's Irradiated Evaporated Milk is served to your entire family every day! They'll like it in beverages, with cereals, in creamed soups and vegetables, and as a part of custards and desserts.

*Wilson's labels may be exchanged  
for valuable premiums.*

**WILSON'S**  
IRRADIATED UNSWEETENED EVAPORATED  
**MILK**

DELICIOUSLY  
FLAVORED  
**4**  
**MILK SHAKES**

MADE ECONOMICALLY WITH

**WILSON'S**  
EVAPORATED MILK

## WILSON'S BABY BOOK

Wilson's Irradiated Evaporated Milk supplies all the nourishment given by whole cow's milk—and a generous amount of important Vitamin D, too, which your physician will tell you is particularly needed by babies for the building of sound teeth and sturdy bones.

Call at the local Wilson's Milk Premium Store, or send this coupon (see reverse side) for the free Wilson's Baby Book, which contains many helpful suggestions on baby care and feeding. Ask, too, for the Wilson Recipe Book, and for the Catalog illustrating the many premiums which you may have in return for labels from the cans of Wilson's Milk you use.



Accepted by the Committee  
on Foods of the American  
Medical Association

Call at our Premium Store in your city, or send this coupon, a letter or postcard to

**WILSON MILK CO., Box 895, Indianapolis, Ind.**



Check here for  
Baby Book.

Check here for Premium  
Catalog and Recipe Book.

Name.....

Street and Number.....

City and State.....

## COCOMALT MILK SHAKE

- 1 cup Wilson's Milk
- 1 cup cold water
- 5 tablespoons (chocolate-flavored) Cocomalt
- Chipped ice

Mix Cocomalt to a smooth paste with two tablespoons of water. Add other ingredients, and shake vigorously. This makes a creamy, nourishing and economical drink.

For a delicious *hot* Cocomalt drink, follow directions on Cocomalt label, using one-half Wilson's Milk and one-half water in place of the milk called for.

## VANILLA MILK SHAKE

- $\frac{3}{4}$  cup cold water
- 1 cup Wilson's Milk
- 1  $\frac{1}{2}$  teaspoons sugar
- $\frac{1}{2}$  teaspoon vanilla
- Chipped ice

Mix ingredients thoroughly by stirring or shaking. Add a dash of nutmeg, if you wish.

You'll be delighted with the smooth, rich flavor of this drink. Serve it often to your family.

## GRAPE MILK SHAKE

- $\frac{3}{4}$  cup grape juice  
(a standard brand)
- $\frac{1}{2}$  cup Wilson's Milk
- $\frac{1}{2}$  cup cold water or  
chipped ice
- $\frac{1}{4}$  teaspoon lemon juice

All ingredients should be cold. Mix milk and water or ice. Add grape juice and lemon juice. If sour grape juice is used, add a little sugar. Shake vigorously.

You've never tasted grape juice so deliciously prepared. You'll enjoy this drink the year 'round.

## PINEAPPLE MILK SHAKE

- 1 cup chilled pineapple juice
- $\frac{1}{8}$  cup lemon juice
- $\frac{1}{2}$  cup ice water
- 1 tablespoon sugar
- $\frac{3}{4}$  cup chilled Wilson's Milk
- Chipped ice

Combine the fruit juices, water and sugar, and add to the milk. Add chipped ice, and shake vigorously.

This drink is a real thirst-quencher—especially on hot summer days. Everyone likes it at meals, and it's just right as a between-meal cooler.

**MILK SHAKES (Cocomalt and Vanilla)**

*Tear these apart here and keep them in your recipe file.*

**MILK SHAKES (Grape and Pineapple)**

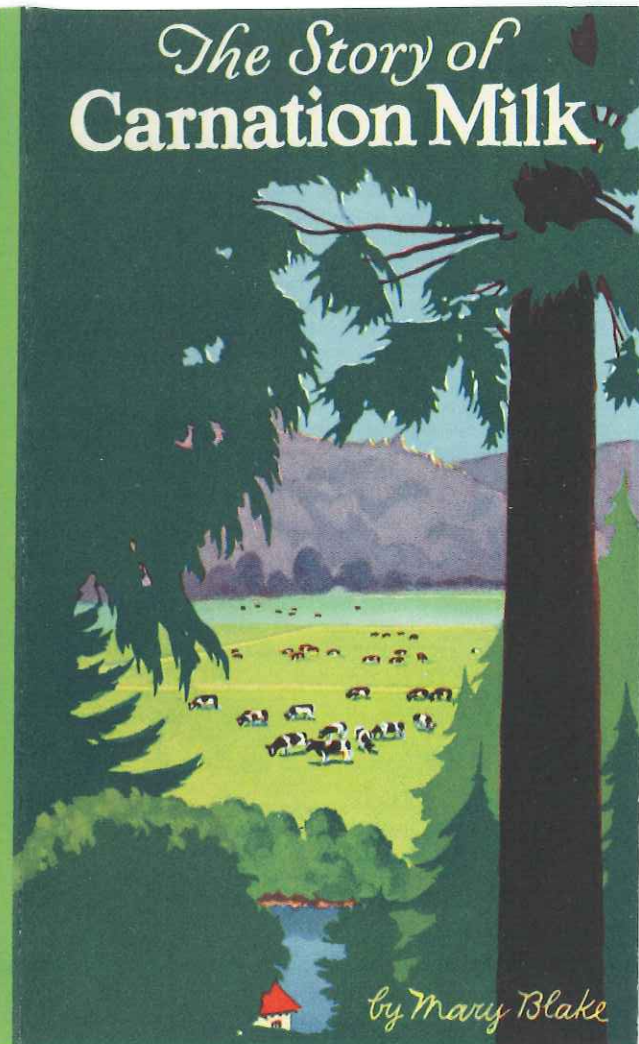


# *The Story of* Carnation Milk

## CREAM OF TOMATO SOUP

1 tall can Carnation Milk  
1 slice onion  
 $\frac{1}{2}$  teaspoon salt  
 $\frac{1}{2}$  teaspoon sugar  
Pepper  
1 No. 2  $\frac{1}{2}$  can tomatoes  
(3 cups)

Pour the milk into the saucepan. Add onion and seasonings and stir in the tomatoes which have been cut fine or pressed through a coarse sieve. Heat slowly only until hot enough to serve. Do not boil. Serve at once. Serves 5 or 6.



*by Mary Blake*

# THE STORY OF CARNATION MILK

By MARY BLAKE

HOME SERVICE DEPARTMENT  
CARNATION COMPANY

**T**HE modern housewife takes so seriously the scientific side of her important business of home-keeping that I find on my desk every morning a little heap of letters asking all sorts of interesting questions about Carnation Milk.

So it has occurred to me to write this little leaflet to answer most of the questions that my correspondents ask. I hope I will succeed in answering *your* questions—but if I do not, please write me for a personal word of further explanation.

## The Search for Safe Milk

Of all the foodstuffs in daily use in the home, milk, by virtue of its complex composition, is the most liable to contamination and deterioration. It is a highly perishable product and the utmost care is needed to protect it.

The recognition of this fact was the foundation of an industry to supply milk to all parts of the world in a pure and safe as well as economical and convenient form—evaporated milk produced right at the source of supply in the best dairying sections.

## Pure Milk Evaporated to Double Richness

Did you ever stop to think that a quart of raw milk contains one and three-fourths pints of water? That is a fact. Milk as it comes from the cow is actually 87% water. All the solids, all the food value, are in the remaining 13%.



Carnation Milk is just pure, fresh milk with about 60% of this natural water content removed by evaporation. All the original butter fat and other milk solids which give milk its

food value are left in—and nothing is added. (It is very important not to confuse Carnation Evaporated Milk with sweetened condensed milk, for the latter contains about 40% of cane sugar.)

## Irradiated for "Sunshine" Vitamin D

Also, Carnation Milk is irradiated with ultra-violet rays. This enriches it with "sunshine" vitamin D, the all-important vitamin that ordinary foods almost completely lack—the *rickets-preventing* vitamin that babies and children must have to give them strong bones and to help them grow well-formed, sound teeth.

Irradiation makes Carnation a more healthful milk for all the family. The method employed is the Steenbock process (U. S. Pat. 1680818), under special license from the Wisconsin Alumni Research Foundation. This process adds no foreign substance or taste to the milk.

## Kept Safe by Sterilization

The full-cream milk remaining after the evaporation process is hermetically sealed in new air-tight cans, then sterilized in live steam. So no matter where you buy Carnation Milk, no matter where you take it—motoring, camping, traveling—you can be absolutely sure when you open the can that the contents will be clean, sweet, wholesome and perfectly safe.

## "From Contented Cows"

The Carnation condenseries are situated in the open country—right in the midst of the best dairy sections of the United States and Canada.





The Carnation Company maintains a large farm of its own near Seattle, Washington. On this farm are herds of pure-bred "contented cows" whose high milk-producing strain is constantly being transmitted to the herds that supply milk regularly to the Carnation condenseries. Better cows mean better milk and so every care is exercised to guard the Carnation Milk supply *at its source*.

### Purity and Wholesomeness

Every morning the clean, fresh milk is brought to the Carnation condenseries in containers which have been sterilized with live steam. The milk is immediately subjected to rigid tests to make certain that it is up to the high standard required. After it has passed these tests it is poured into glass-lined tanks, then sent to the pre-heating tanks. After being heated to a pre-determined temperature, the milk is drawn to vacuum pans where about 60% of the natural water content is removed.

Next comes irradiation. The flow of the milk through the irradiator, where it is exposed to ultra-violet rays, takes only a second or two, but that is enough to enrich every drop with "sunshine" vitamin D.

The milk after evaporation has the consistency of rich cream and must now pass through the homogenizing machine where it is forced under high pressure through holes so small that they can be seen only through a microscope. By being pushed through these minute openings, the fat globules are broken up and distributed uniformly throughout the milk. The effect of this process is permanent, so evaporated milk has no cream line. The milk at the bottom of the can is just as rich as that at the top.

Now, after cooling and testing, the milk flows to filling machines, which automatically fill the cans and hermetically seal them by soldering the tiny opening through which the milk is forced.



The next step in the process might be termed *insuran*—the perfect sterilization of the product by live steam. This operation destroys all bacteria, particularly those which cause the souring of milk. Thus, perfect keeping qualities and absolute safety are insured. This process also contributes to Carnation Milk's creamy taste, cream color, and creamy body.

From the sterilizer the cans go to the heat room, which is maintained at blood temperature so that any imperfectly sealed or otherwise defective cans that may have escaped prior inspection may be picked out. Every can is then hand tested as a final precaution. The final step—the labeling by automatic machines—and then the product—Carnation Milk "from Contented Cows"—is ready for market.

Each step of the process is given the same scientific care that the fondest mother would give to the preparation of her baby's bottle. The most exacting housewife would be delighted with the immaculate cleanliness of the condensery and of every milk container and utensil employed in the production of Carnation Milk.

### Carnation Quality

Quality is the watchword in every department of the Carnation organization. Wherever there is a Carnation condensery you will find the same insistent demand for quality—in the equipment of the condensery, in the housing and care of the cows, in the milk as it comes from the farm, and in the method of handling. It is the constant striving to maintain this high standard that has made Carnation Milk known the world over.

You may have heard some of your friends express the thought that evaporated milk is not fresh milk. The fact is that it is fresher than ordinary market milk. The transportation of milk from the dairy to the city is well system-



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Many have heard some of your friends say they thought that evaporated milk is not as good as the fact is that it is fresher than market milk. The transportation of milk from the dairy to the city is well system-



atized and rapid, but much of it must be obtained at considerable distances. A large percentage, therefore, is necessarily some days old when it is delivered by the milk-man.

Carnation Milk on the other hand is last night's and this morning's milk—delivered to the condensery when it is freshest and purest. As you have noted from the foregoing description, the whole process from cow to can requires only a few hours. Once the milk is in the hermetically sealed containers and sterilized there is no possibility of contamination. You may open a can of Carnation Milk in summer or in winter and you will find the contents just as when put into the can, as sweet and wholesome as when fresh from the cow. This is accomplished without the aid of any preservatives.

Do not expect Carnation Milk to taste like ordinary market milk. It is richer, purer, and safer, and that accounts for the distinctive taste—the taste of purity. This characteristic taste is not evident in your cooked foods; instead you will find a greatly improved flavor in all the dishes in which this wholesome milk is used.

### Ideal Milk for Cooking

I am constantly finding new virtues in Carnation Milk for cooking. It is really "insured" milk for it is always dependable, always the same high quality. You will find that it enriches food because it is always whole milk, the cream being so thoroughly distributed throughout the contents of the can that it will not rise to the top as it does in ordinary milk. Its smooth, creamy consistency gives food a finer texture. It is excellent for making cream sauces, gravies, pastries, candy—in fact, all dishes where the recipe calls for milk. Once you have become accustomed to its use, you will be delighted with its richness, purity, convenience and economy and will never revert to the old-fashioned milk supply.

Undiluted, just as it comes from the can, Carnation may be used in place of cream. Many prefer it to cream, and these households have the added satisfaction of cutting their cream bills two-thirds. To reduce Carnation to milk of normal richness and consistency, for cooking or drinking, simply dilute it with an equal amount of water.

### Ideal for Baby's Bottle

Carnation Milk formulas are very generally prescribed by baby specialists. Carnation is not only absolutely safe and as nourishing as the best bottled milk, but also *easier to digest* than milk in any other form. It forms very fine, tender, flaky curds in the baby's stomach, like those formed by mother's milk, and its homogenized fat is easier to assimilate. Irradiation adds a nutritional factor in which ordinary milk is deficient—the bone-building, tooth-protecting "sunshine" vitamin D. Carnation Milk has been "Accepted" by the Committee on Foods of the American Medical Association. Look for their seal and the word "Irradiated" on the label. Carnation Milk is recommended for children who

have outgrown the bottle—may be diluted for drinking, used undiluted for creaming fruits and cereals, employed to add needed nourishment to cooked foods. There is a very helpful Carnation baby booklet which I shall be glad to send to any mother.



### Pure Milk in a Modern Package

Carnation users especially appreciate the fact that they can keep an ample supply on hand without waste or spoilage. Carnation Milk keeps indefinitely till opened, and will stay pure for several days after opening if stored in a cool, clean place.

With a half dozen cans of Carnation Milk on the pantry shelf you are ready for any emergency. Unexpected guests, a sudden inspiration to bake a cake or make a platter of fudge—it makes no difference to the household that depends on "pure milk in a modern package." That's my name for Carnation Milk. Don't you think it a good one?



## IT'S IRRADIATED!

Irradiation with ultra-violet rays makes Carnation Milk a rich source of "sunshine" vitamin D—the vitamin that makes children's bones grow straight and strong and helps protect the teeth of young and old from malformation and decay. There's added nourishment in Irradiated Carnation Milk—at no increase in cost. Look for the word "Irradiated" on the label!







*The Improved*

# Carnation Milk

Fine in Flavor  
Creamy-Light in Color  
Smooth in Consistency  
Irradiated for  
**"SUNSHINE" VITAMIN D**

## CREAM OF TOMATO SOUP

- 1 tall can Carnation Milk
- 1 slice onion
- 1/2 teaspoon salt
- 1/2 teaspoon sugar
- Pepper
- 1 No. 2 1/2 can tomatoes  
(3 cups)

Pour the milk into the saucepan. Add onion and seasonings and stir in the tomatoes which have been cut fine or pressed through a coarse sieve. Heat slowly only until hot enough to serve. Do not boil. Serve at once. Serves 5 or 6.



### WRITE FOR *Three* RECIPE BOOK

This coupon entitles you to one copy of "100 Glorified Recipes," Mail to Carnation Company, Milwaukee, Wis.; Seattle, Wash.; or Toronto, Ont.

Name.....

Street.....

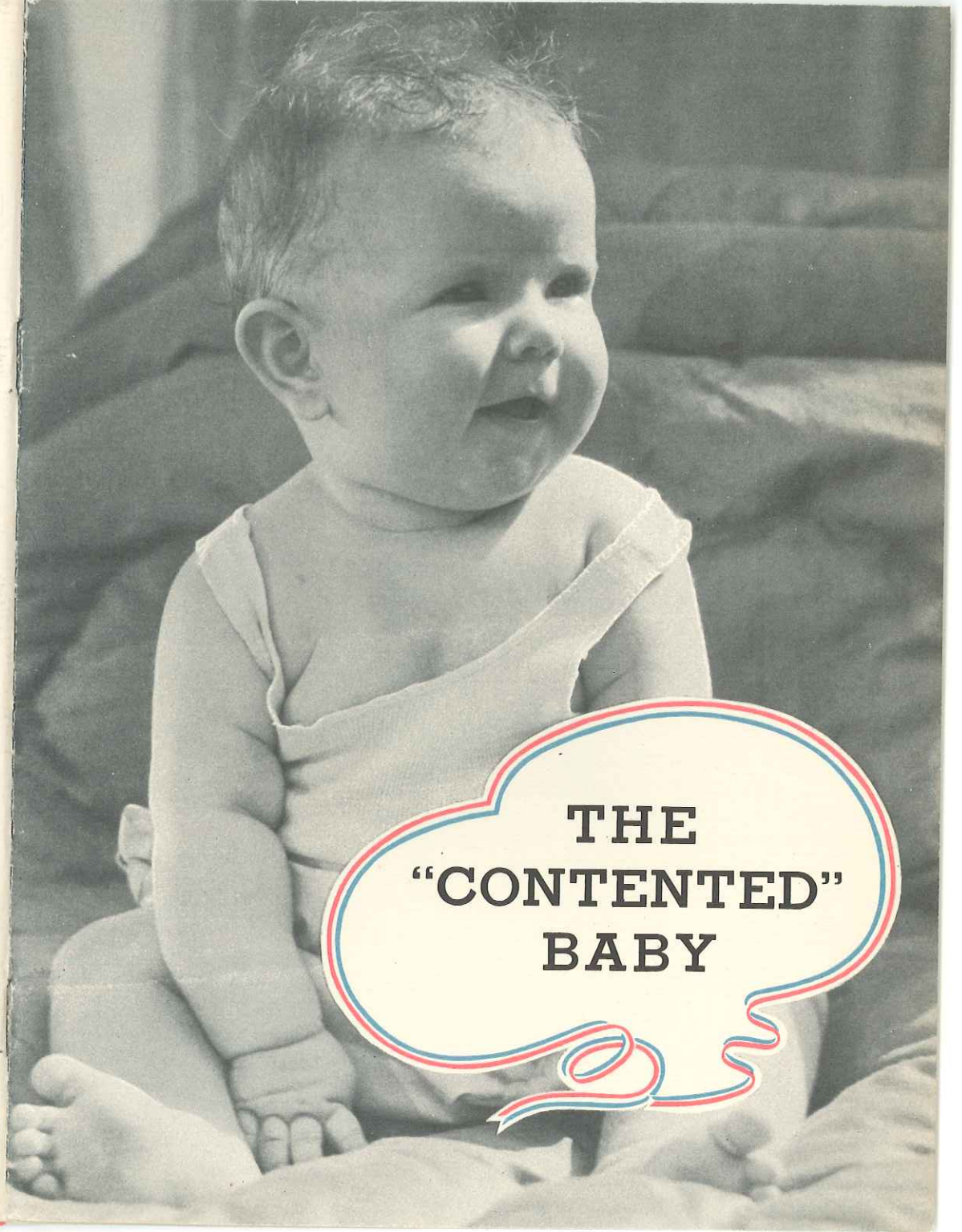
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Printed in U. S. A.



"FROM CONTENTED COWS"



THE  
"CONTENTED"  
BABY



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ONLY A BABY  
★ SMALL ★

*Only a baby small,  
Dropped from the skies,  
Only a laughing face,  
Two sunny eyes;  
Only two cherry lips,  
One chubby nose;  
Only two little hands,  
Ten little toes.*

*Only a golden head,  
Curly and soft;  
Only a tongue that wags  
Loudly and oft;  
Only a little brain;  
Empty of thought;  
Only a little heart,  
Troubled with naught.*

*Only a tender flower  
Sent us to rear;  
Only a life to love  
While we are here;  
Only a baby small,  
Never at rest;  
Small, but how dear to us,  
God knoweth best.*

*Matthias Barr*

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As You Read These Pages  
remember this seal

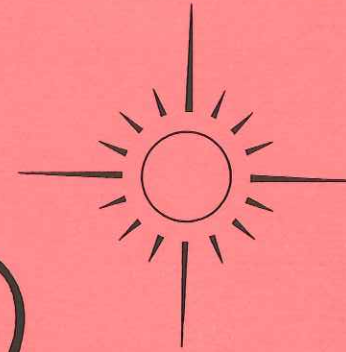
The American Medical Association is America's foremost scientific society in the medical field. Its membership of nearly 100,000 doctors includes the outstanding authorities on infant feeding.

Naturally, then, when you see on the Carnation Milk label the seal of acceptance of this great organization's Committee on Foods, you can feel absolute confidence in the wholesome, nourishing goodness of Carnation Milk, and in its suit-

ability as a food for little babies.

But do you realize that this seal also protects you from misleading advertising claims? Yes, that is a fact; a food may be pure, but if its advertising is *impure*, the Committee will reject it! So, in reading the following pages, please keep this in mind: All statements made here about Carnation Milk have been accepted by the Committee on Foods of the American Medical Association.

A NOTE TO MOTHERS—You will find in this booklet *no formulas for baby feeding*. That is the province of the physician, and rightly so, for each baby's diet presents a different problem and no general formula for the "average" baby can fit all cases. Let your doctor prescribe for your baby. And take the baby to the doctor at regular intervals, as he suggests, so you can be sure that he is making the best possible progress.



# Irradiated

FOR BABY'S SAKE

THERE'S so much to tell you about this "accepted" milk for babies. But first of all let us tell you about *irradiation*.

Carnation Milk is irradiated. And that very fact means that *another* noted scientific organization—the Wisconsin Alumni Research Foundation—stands side by side with the American Medical Association and adds its endorsement to Carnation Milk. For the Wisconsin Alumni Research Foundation controls the only process for food irradiation; its license, granted the Carnation Company, is in itself

evidence of unquestionable quality.

But irradiation signifies more than that. It means that babies fed on Carnation Milk formulas now get the benefit of the *rich supply* of vitamin D that this process produces. The "sunshine" vitamin! The sun's own rays create it when they shine on our bodies. It is the all-essential vitamin that makes babies' bones grow sturdy and straight and is believed to be an important factor in the development of fine, strong teeth.

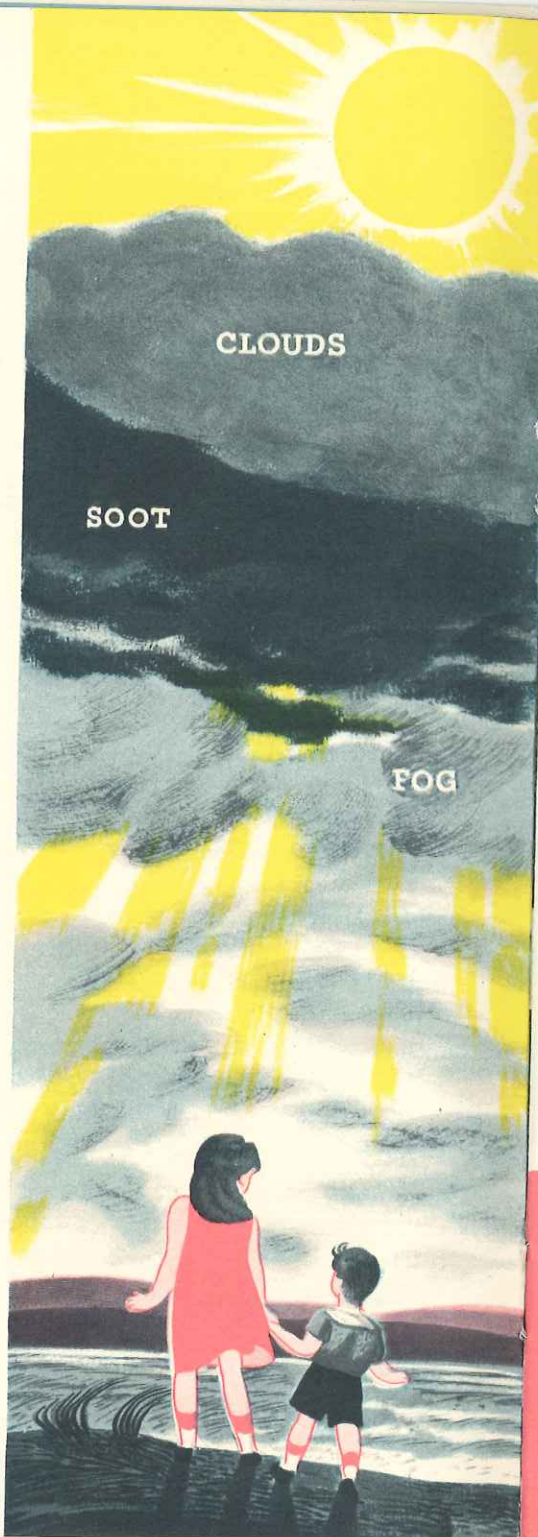
You might suppose that, with the good old reliable sun supplying us,



no one need worry about a possible shortage of vitamin D—but the fact remains that there *is* a shortage. Scientists have noted it, and they have discovered the explanation.

The truth is that only a part of the sun's rays help the body to manufacture vitamin D. It is not the rays that we can see, but the *invisible* ultra-violet rays, that do the work; and these rays are easily baffled—by clothing, smoke, soot, clouds, and even by ordinary window glass. In the winter, the slanting beams of the sun deliver practically no ultra-violet rays; and even in summer these rays are strong only for two or three hours in the middle of the day.

Here is another interesting thing about vitamin D. It is the only important vitamin that is not sufficiently supplied by common foods in a diet that is reasonably well balanced. Scientists have tested the vitamin potency of thousands of foods, yet they have found *only one* excellent source of vitamin D—cod-liver oil. Some other fish oils are good sources; and there is only one *fair* source, egg yolk. So it is not surprising that an actual deficiency in vitamin D is one of the well-defined characteristics of the average American diet.



## MOST SERIOUS IN CHILDREN

A shortage of vitamin D produces rickets in babies and growing children. This nutritional disorder causes bow legs, knock knees, deformed heads and chests, and narrowed pelvic structures. So you can see that its effects, in the more acute cases, are carried throughout life. Pelvic deformities in girls often cause grave difficulties later, in childbirth.

The teeth may be similarly affected by this deficiency. Irregular and badly formed teeth are frequently noted in children with a history of rickets. And later in life, the teeth of expectant and nursing mothers are especially prone to attack when vitamin D and calcium and phosphorus are insufficiently supplied by the diet.

Many children fall victim to rickets without any early outward sign being given. But X-ray photographs tell the story to the physician. It is estimated that from 50%

to 85% of all children in the northern part of the United States are afflicted in some degree.



Vitamin D is the "mason" vitamin

## BONE-BUILDING MINERALS WASTED

Calcium (lime) and phosphorus are the two minerals needed for the development of the bones and teeth. These minerals are abundantly supplied by a baby's principal food, milk. Yet, a baby may get plenty of milk—milk *rich* in calcium and phosphorus—and still have defective bones and teeth!

Vitamin D is needed. This mysterious factor is like the mason who lays brick in an orderly fashion to make an enduring wall. Good bricks alone are not sufficient. That is why the irradiation of Carnation

**CONTENTED BABY**—"During the first few weeks our baby boy Bruce cried almost continuously and kept three of us trying to console him day and night. We consulted the baby's doctor and he recommended a Carnation Milk formula. From that time on our troubles were at an end. Bruce has ever

since been a Contented Baby, and has grown to be a healthy, strong boy weighing now (at 10 months) a few ounces less than 25 pounds"—Mrs. Kenneth M. Banks, Utica, New York.





Milk means so much to everybody.

Irradiated Carnation Milk is now a *rich* source of the "sunshine" vitamin, though it may not be the *only* source that your baby's doctor may prescribe. He may consider it advisable to make cod-liver oil or viosterol a part of your baby's formula, but the *extra* vitamin D in the milk itself will be a valuable supplement; and in the growing-up years, when your child may refuse to take cod-liver oil as a part of his daily diet, the abundance of vitamin D in Carnation Milk will be a constant protection.

#### A WORLD-FAMOUS SCIENTIFIC PROCESS

The irradiation of Carnation Milk is accomplished by a process perfected by Dr. Harry Steenbock, noted American scientist, who discovered that certain foods could be enriched with vitamin D by exposing them to artificial ultra-violet

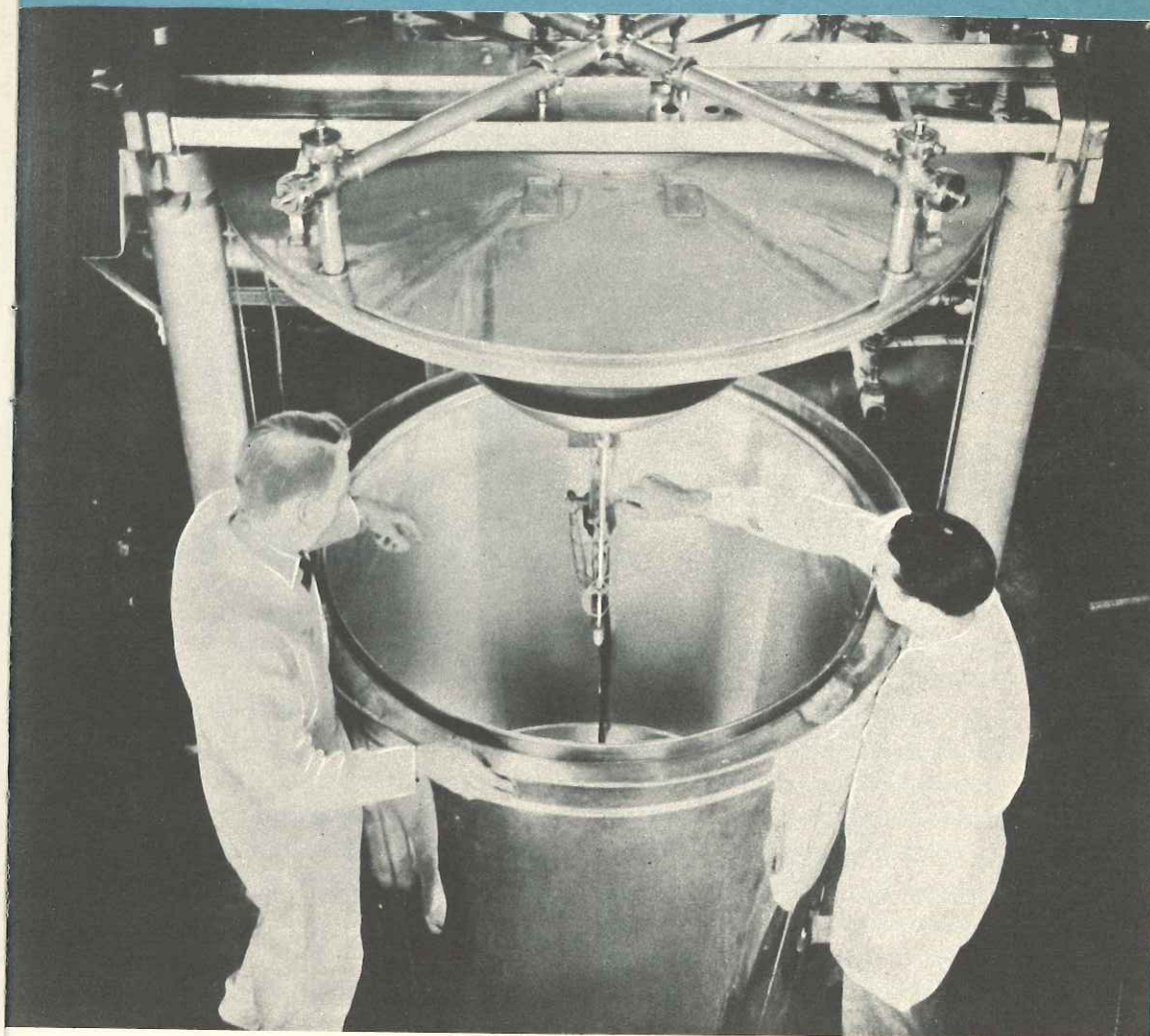
rays, like those in natural sunlight.

This process, it was immediately realized, was peculiarly well adapted for use with milk, the universal food of babyhood, and the *one* food that contains a generous supply of the lime and phosphorus with which vitamin D does its bone-building work. *Evaporated* milk, now a favored form of cow's milk with many leading specialists in baby-feeding, was selected as an ideal food for irradiation—and among the limited number of evaporated milk producers held to be properly qualified for licensing to employ this exclusive patented process (U. S. Patent No. 1680818, Canadian Patent No. 291138) was the Carnation Company.

This license, as you have already read, is granted by the Wisconsin Alumni Research Foundation, a non-profit organization formed to administer the Steenbock patents for the welfare of the general public, as a protection against the unscrupulous and indiscriminate use of the principle of irradiation.

So now the Carnation Company works hand in hand with the Wisconsin Alumni Research Foundation, to make sure that every can of Carnation Milk is uniformly enriched with vitamin D.

AN IRRADIATOR FOR ENRICHING CARNATION MILK WITH "SUNSHINE" VITAMIN D

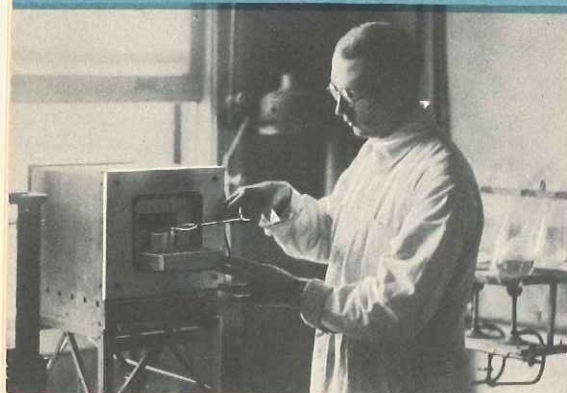


#### METHOD USES LIGHT RAYS ONLY

The process of irradiation is simple in principle, though elaborate scientific checks and controls

are maintained at every step. It consists in exposing a thin flowing film of milk to the rays of a carbon-arc lamp. Only a few seconds are needed to enrich the milk with

Constant laboratory control assures the uniform potency of Irradiated Carnation Milk







vitamin D—and the taste and color of the milk are not affected.

No substance is added to the milk. In this respect Irradiated Carnation Milk differs from some vitamin D milks to which a cod-liver oil concentrate is added. Milks of this latter type are not irradiated. On your next visit to your grocer, pick up a can of Carnation Milk; you will notice the word "Irradiated" prominently displayed.

#### FOR ALL THE FAMILY

Irradiated Carnation Milk is especially valuable for babies, of course. But do not overlook its importance for growing children, all

through the period of adolescence; and even for adults.

As has already been pointed out, an extra supply of vitamin D is very important for expectant and nursing mothers, whose own bones and teeth may be drained of calcium and phosphorus to supply the infant's needs. Further than this, it is believed that *all* adults are benefited by a diet enriched with vitamin D.

Just one more point about the irradiation of Carnation Milk. It is done without increasing what you pay for this good milk. Nutritional value is added, but the Carnation Company absorbs the cost.

# And it was already

## A WONDERFUL MILK FOR BABIES

Nearly two years before Carnation Milk was first irradiated, one of the world's foremost baby specialists stated that the most important advance in scientific infant feeding in the decade from 1920 to 1930 was the "recognition of the virtues of unsweetened evaporated milk."

And Carnation Milk is unsweetened evaporated milk!

The same authority went on to say, "The present decade finds American journals rife with articles extolling evaporated milk dilutions. Favorable reports from all quarters have established for evaporated milk a singular place as a food for young infants. *No adverse observations have thus far been published.*"

And not so long ago most people were *suspicious* of milk in cans!

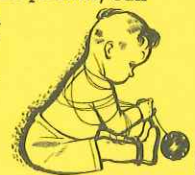
#### WHAT THE COMMITTEE ON FOODS SAYS

It is simple truth to say that Carnation Milk is now accepted by the medical profession as one of the best of foods for bottle-fed babies. Though physicians stress the importance of a mother's nursing her baby so long as her milk seems satisfactory in quality and quantity, many now often prescribe supplementary feedings of Carnation Milk to supply added nourishment and to accustom the baby to bottle-feeding in advance of weaning.

Again we may turn to the Committee on Foods of the American Medical Association to see what that authoritative group has to say about Carnation Milk for babies. The Committee's sanction has been given to the following statements:

TRIED EVERYTHING—"When Patsy was born she weighed 7 pounds; when a month old she weighed only 6 pounds. I tried everything, but at 2 months she still hadn't gained any weight, and her strength was low. Finally I took her to my doctor, who simply said, 'Give her this Carnation Milk formula.' I

never saw such a difference in a baby! Patsy's digestive upsets stopped; she's never sick. At 9 months she weighs 26 pounds, can almost walk, and has 8 teeth and a complexion like velvet."  
—Mrs. William Sikorski, Chicago, Ill.





## ACCEPTED CLAIMS

**1** The vitamin D content of Irradiated Carnation Milk is increased by direct irradiation with ultra-violet rays (U. S. Patent 1680818, Canadian Patent 291138, under license from the Wisconsin Alumni Research Foundation), making this a highly potent vitamin D milk for infants and children and for the special nourishment of bones and teeth by promoting a more efficient utilization of calcium and phosphorus.

**2** Irradiated Carnation Milk is pure fresh cow's milk with approximately 60% of the water removed by evaporation under reduced pressure. It is not a patented or proprietary food but a staple commodity.

**3** Irradiated Carnation Milk supplies all of the important food values of whole cow's milk, including those vitamins which milk can be depended upon to supply, plus an extra amount of vitamin D created by irradiation.

**4** Irradiated Carnation Milk is sterile and therefore is the safest milk obtainable; it cannot introduce pathogenic micro-organisms to induce diarrhea in infants.

**5** Irradiated Carnation Milk is more readily digested than raw milk or milk boiled only a very short time.



**6** Irradiated Carnation Milk casein curd in the stomach is very fine and soft in texture or structure. It resembles in physical structure the curd of human milk.

**7** Irradiated Carnation Milk is homogenized, which produces a fine dispersion of the fat particles and renders them more readily acted upon by digestive enzymes and more thoroughly assimilated.

**8** Irradiated Carnation Milk is considered by many pediatricians to be the best form of cow's milk for preparing the baby's formula.

**9** Irradiated Carnation Milk is a most convenient and economical whole-milk supply for family and community.

**10** Irradiated Carnation Milk is usually less allergic than raw milk or milk boiled only a short time.

**11** Irradiated Carnation Milk has been shown to be valuable in special diets for adults when a readily digestible form of milk is required.

**12** Irradiated Carnation Milk enables the introduction of more

milk in the diet because it is concentrated.

**13** Irradiated Carnation Milk whips. Because of the homogenization it produces a "buttery" flavor and a characteristic texture and consistency in foods in which it is used.

## NOTED FOR EASY DIGESTIBILITY

We hope you have read carefully the foregoing statements accepted by the Committee on Foods of the American Medical Association. If you have, you will realize that your doctor, should he prescribe a Carnation Milk formula for your baby, has chosen an admirable food in every way.

You will see that Carnation Milk is pure and safe; that it is as nourishing as any milk can be, with added nutritive value in vitamin D; that its curd resembles the curd of human milk; and that it is easier to digest. You couldn't ask more than that, could you?

**HAPPY RESULT**—"After our baby came, the trouble of correct milk for bottle feeding was encountered. Our regular doctor, in his earnest endeavor, made four changes which only aggravated the condition. He then asked that a baby specialist

be called. After examination and questioning the specialist immediately prescribed a Carnation Milk formula. The result? Three feedings and a decided change—three days, and a baby on the road to health."—Mr. H. J. Oliver, Montreal, Quebec.



**OFF TO THE MOUNTAINS**—"Our baby is 9 months old now, weighs 25 pounds, and has 6 teeth. Our baby specialist put him on Carnation Milk in the hospital, and we have never had a minute's trouble with him. I like Carnation Milk too, for it is so simple to prepare the bottles, and you can buy it in any

store. We are away for a few weeks in the mountains, and it is wonderful not having to worry about changing milk."—Mrs. Joseph Wm. Power, Jacksonville, Florida.





## PROOF OF THE EASY DIGESTIBILITY OF CARNATION MILK

(Actual photographs of milk curdled by the addition of pepsin)

Breast milk forms fine, soft, flaky curds.



Pasteurized milk forms tough, solid curds



Carnation Milk forms curds like breast milk.



Of all these virtues, easy digestibility is undoubtedly the most important. A baby deprived of its mother's milk and put on cow's milk, a food intended for baby calves, often has a tremendously difficult time. But Carnation Milk, properly modified under the physician's direction, agrees wonderfully with most babies—with sick babies and premature babies, as well as with normal healthy ones.

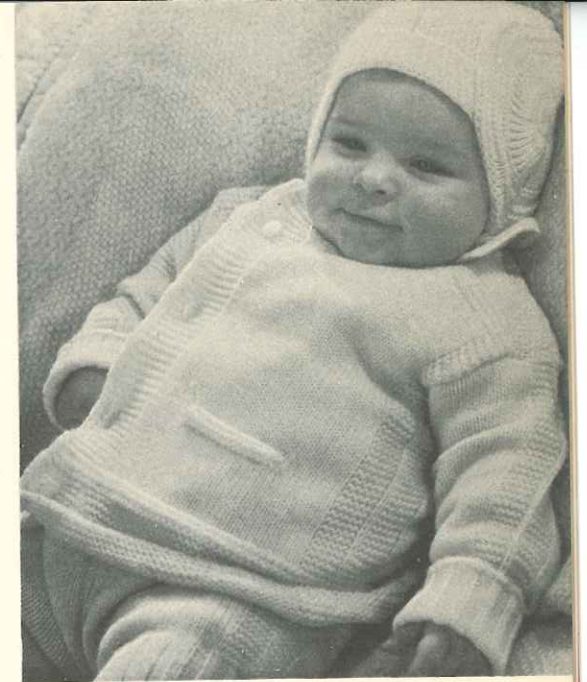
Many cases of undernourishment, of failure to gain properly, of constant crying and fretting, of digestive upsets of one sort or another, are simply cases of *starved babies!* These unhappy little mites are ravenous for food—

but they push the half-full bottle away because . . . well, literally because it makes them sick. It may be the costliest special milk—but their tortured stomachs cannot retain enough of it to give them the nourishment they need.

Then along comes a Carnation Milk formula and the trouble seems to vanish like magic. Baby's hunger is satisfied at last—and Mother gets her first night's rest in weeks!

### A DOUBLE PROTECTION

Did you notice that statement about the *safety* of Carnation Milk, as accepted by the Committee on Foods of the American Medical Association? "The safest milk ob-



It's easy to travel when Baby is on Carnation Milk

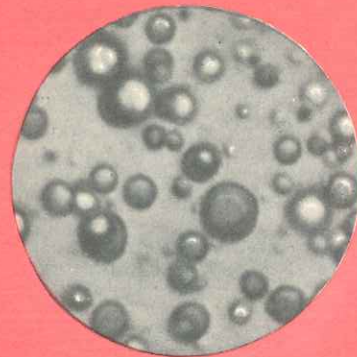
tainable." That is because Carnation Milk is *sterilized*, and because it comes sealed in air-tight cans.

Carnation Milk protects your baby from disease germs often carried by milk. It means that no matter where you go, you can buy the same safe milk that you get at home, and not have to take chances on milk from some source with which you are not fully acquainted.

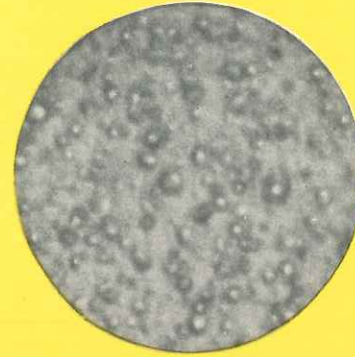
That is *one* protection. And here

because the formula she was taking was not satisfying. But from that very day she began to gain weight and sleep soundly. She is 10 months old and now weighs 23½ pounds. I have been able to travel with her, and feeding is never a problem, for I know that wherever I go I can get Carnation Milk."—Mrs. Leland Robertson, East Point, Georgia.

Coarse fat globules in raw cow's milk—hard to digest



Tiny fat globules in homogenized Carnation Milk—easy to digest



**FREE TO TRAVEL**—"Until an Atlanta specialist prescribed Carnation Milk for my daughter Gayle, she was restless and underweight, and cried long before feeding times



is another, almost as important. Carnation Milk is *uniform* in quality and food value. One can is like another—just as rich in butter-fat and other nourishing milk solids. Every mother knows what a help that is in protecting babies from digestive upsets.

### CONVENIENT AND ECONOMICAL

The ease with which you can buy Carnation Milk anywhere—and take it anywhere, protected from spoiling and contamination—is enough to make this the most convenient of all milks from a mother's standpoint. But there is more to Carnation's convenience than that.

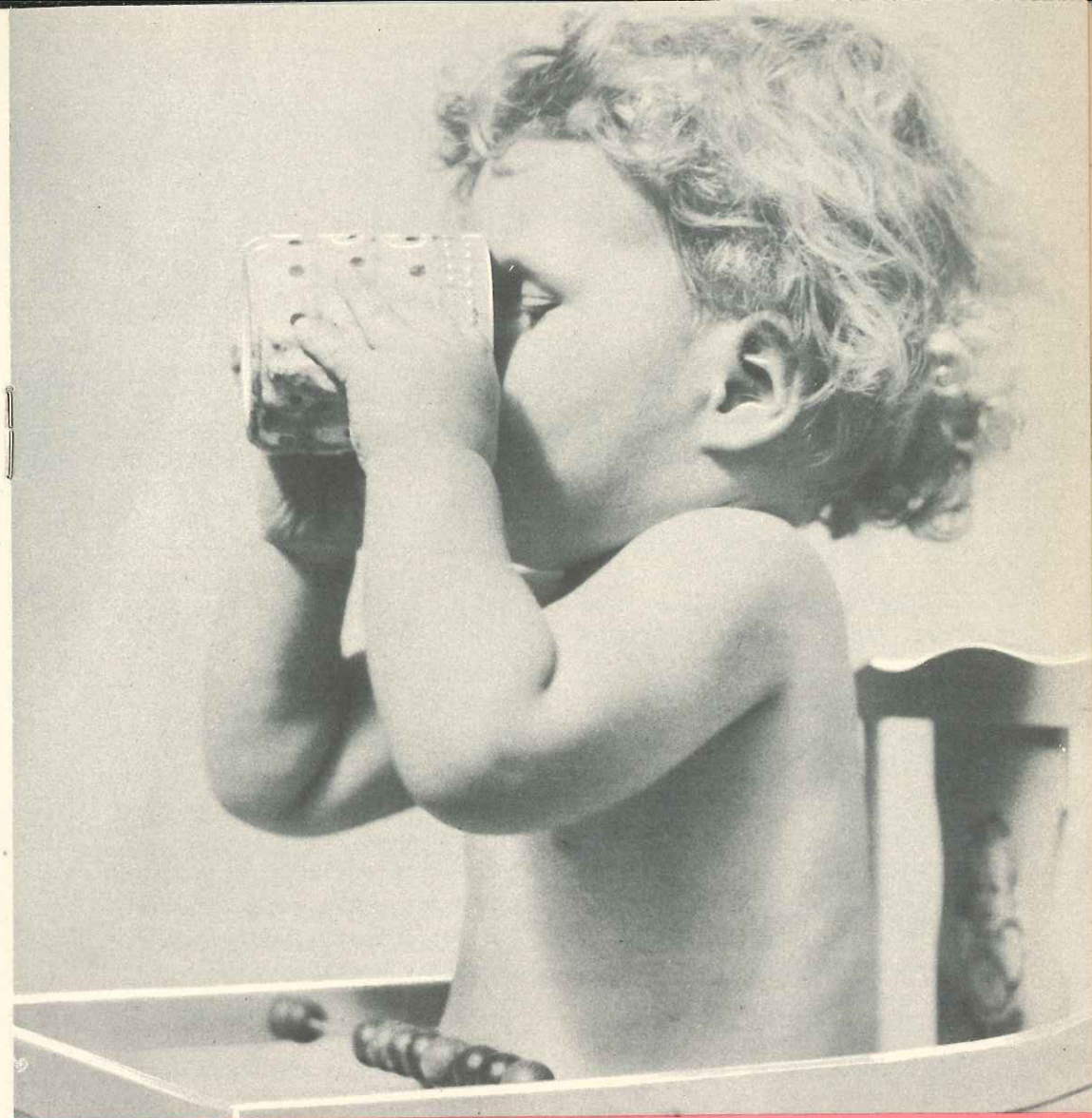
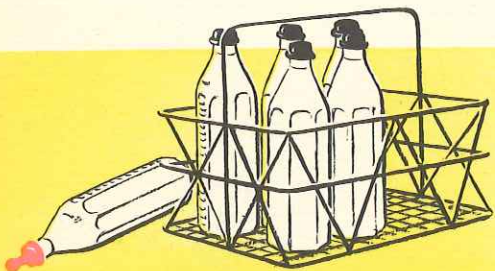
Carnation Milk is already sterilized—you do not have to boil or pasteurize it in preparing the baby's feedings! That saves a tremendous amount of time and trouble, as every mother knows. And again it

simplifies the problems that arise when the baby is taken traveling or visiting. Just carry along Carnation Milk, unopened, and you have the safest of milk when you need it.

No matter what the formula, it is easily prepared with Irradiated Carnation Milk. Some doctors favor a simple formula using Carnation Milk, boiled water, and carbohydrate (cane or milk sugar or corn syrup). Others prescribe acid-milk mixtures. But Carnation Milk adapts itself readily to either type of formula; excellent results are being obtained by both methods.

Carnation Milk as it comes from the can is double-rich—much too rich for a tiny baby's digestion. *An equal amount of pure boiled water must be added* to give you the equivalent of whole milk. This half-and-half dilution is the starting point for further modification when the formula is expressed in terms of whole milk instead of evaporated milk.

Economy is one more point in favor of Carnation Milk. Here is a case where the best milk is actually the cheapest! Even now, with Carnation Milk's nutritive value increased by irradiation, the cost has not been affected.

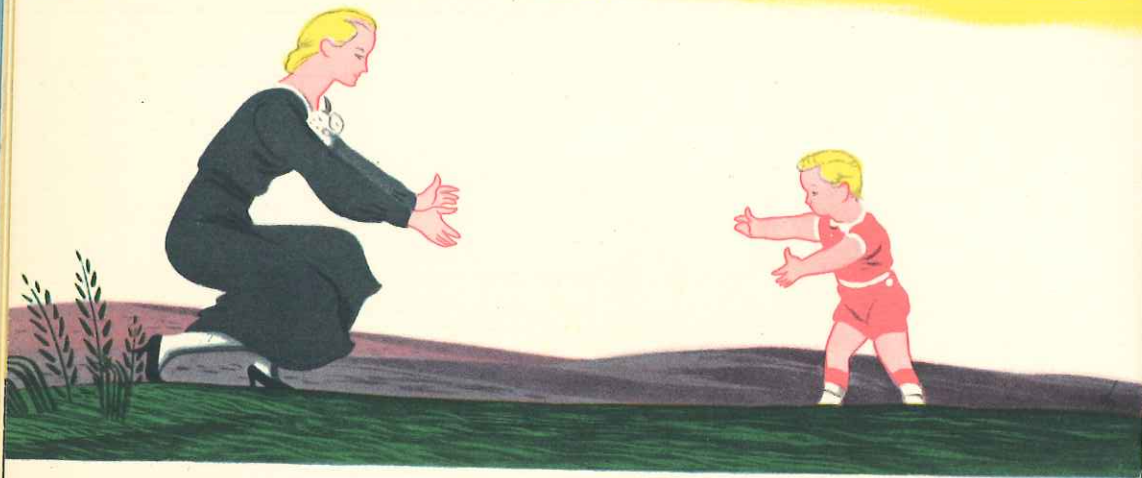


FROM A GRADUATE NURSE—"Even before I left the hospital with my baby, the nurses were forced to add supplemental feedings of Carnation Milk after every nursing. At nine days of age, when I took her home, she weighed 5 lbs. 14 oz., and three days later was put on a Carnation formula entirely. From that day she has grown by amazing

leaps and bounds, has never had a minute's sickness, and is the happiest, peppiest baby I have ever seen—and, being a graduate nurse, I have seen lots of them."  
—Mrs. H. F. Le Fever,  
Seattle, Wash.







### IT'S FINE FOR THE TODDLERS

There's a saying you may have heard: *Carnation babies never have to be weaned.* That is true. When a baby outgrows his bottle, let him keep right on drinking Carnation Milk. If it agrees with him, and he likes it, why change!

Simply adding an equal amount of pure water to Carnation Milk gives you whole-milk richness for drinking. Or, if your baby has to be begged and bribed to drink his milk, you can try him on *undiluted* Carnation. One cupful will provide all the nourishment of *two* cupfuls of ordinary milk—and Carnation Milk is so easy to digest that most children will not be upset by the double richness.

Another way to give growing boys and girls the milk they need

is to use undiluted Carnation Milk as cream for their breakfast cereals, and on fruits and puddings. It is really foolish to nag children into drinking more milk than they enjoy when it is so easy to give them exactly the same milk nutrients in other forms.

Cooked foods that children love are delicious when made with Carnation Milk—for instance, custards and rice pudding. Using nourishing Irradiated Carnation Milk in preparing these dishes means just that much less milk for the youngster to drink. And remember, its vitamin D is not harmed by heating.

Further on in this book you will find some especially fine tested recipes for children's favorite dishes. And unless we are very much mistaken, you will find the whole family voting for them!

# HOW ★ ★ ★ Carnation Milk IS PRODUCED

You have been reading about the goodness of Irradiated Carnation Milk. Now perhaps you would like to hear a little about the various scientific processes that make it such a fine milk for babies.

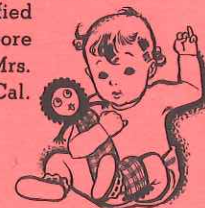
What is Carnation Milk? Why, simply rich *whole* milk—fresh, foaming country milk right off the farm—with part of the natural water taken out. Whole milk is approximately seven-eighths water. In producing Carnation, enough of that water is evaporated to make the remainder *twice as rich*. Only water is taken out; all the food value is left in the milk. And nothing is

added—except the extra richness in vitamin D that results from irradiation.

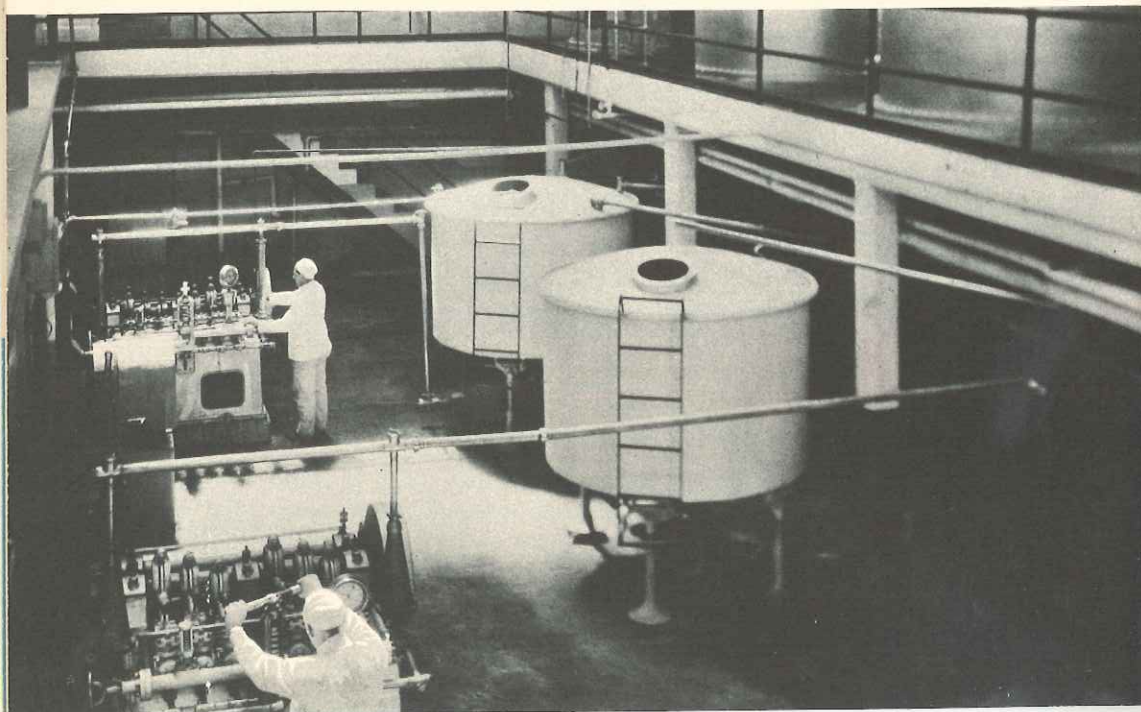
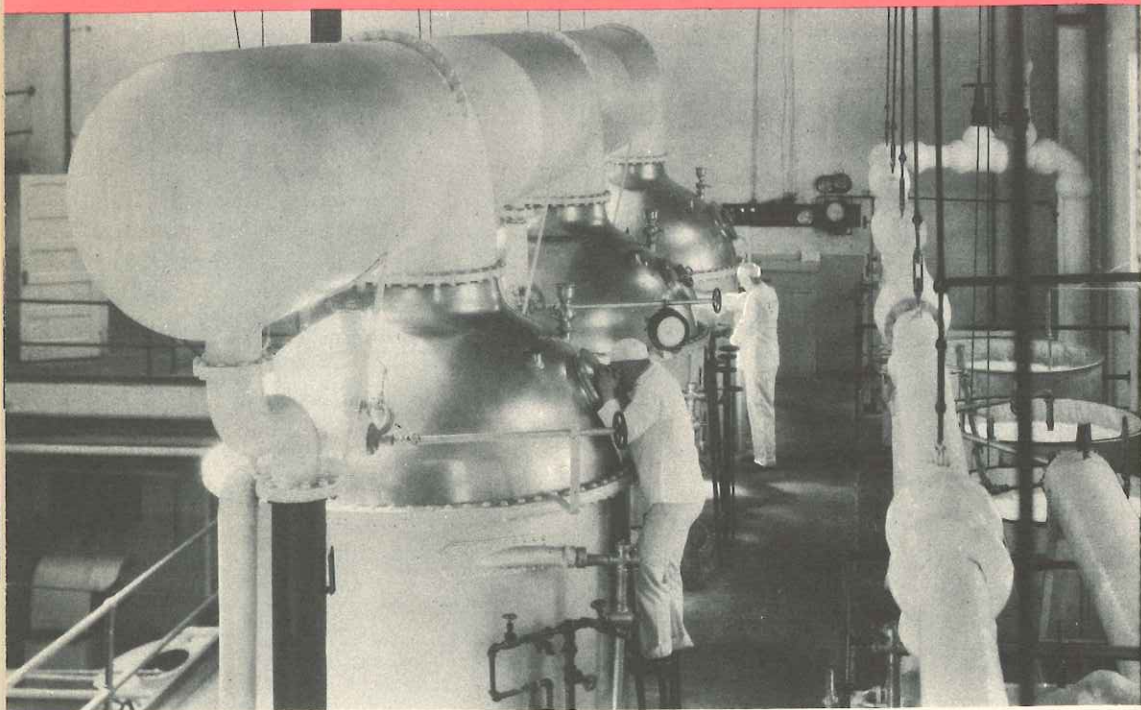
You have already been told about irradiation, so we may pass on to another interesting process—*homogenization*. This consists of forcing the milk under tremendous pressure through openings so tiny that they "grind" the coarse fat globules found in raw milk into millions of microscopically tiny ones—so tiny that they remain mixed with the milk, never rising to the top, and making the last drop from the can as creamy as the first. That not only renders the milk more

CHANGED OVER-NIGHT—"When my baby was one month old, he was always hungry, seldom slept, and was terribly cross. He didn't gain, so I took him to my family physician, and we tried several formulas, but none agreed with him. I finally took him to a specialist, and he recommended Irradiated

Carnation Milk. It was almost like magic; he changed over-night. He started to gain immediately, slept more, and after each feeding was completely satisfied and contented. What more can a mother want?"—Mrs. Thomas Waco, Albany, Cal.







digestible—it also makes it smoother for cooking.

Then there is sterilization. That is what makes Carnation Milk "keep"—for no preservative is added, and Carnation Milk would spoil, just like fresh milk in any other form, if it were not sterilized. This process comes *after* the milk is hermetically sealed in the can. Then the precise degree of heat is applied—and the user is assured that no matter when the can is opened the contents will be as pure as when they went in.

These are just the high-lights. It would take pages to tell all about the scientific tests and controls that safeguard every process and insure the quality that has made Carnation a standard milk for infant feeding—and the world's largest-selling brand of evaporated milk.

#### THE GREATEST COW IN THE WORLD

Carnation Milk is obtained from thousands and thousands of fine

dairy farms, the best farms in America's richest dairying sections. But there is one farm that the Carnation Company owns, and this farm makes all the others set their standards higher.

Near Seattle, Washington, is the famous Carnation Milk Farm. The monument pictured on page 20 is located there—a tribute to the memory of a Carnation "Contented Cow" known the world over as the greatest milk producer that ever lived. This famous animal, Segis Pietertje Prospect, produced 37,381.4 pounds of milk (over 17,000 quarts) in one year—seven times the production of the average cow!

Just to show you that this was no accident, and that the Carnation Milk Farm is a truly remarkable institution, here is a phenomenal fact: the world's greatest *living* milk producer, and the present United States champion butter producer are both grand-daughters of this same Segis Pietertje Prospect—are both Carnation cows, born

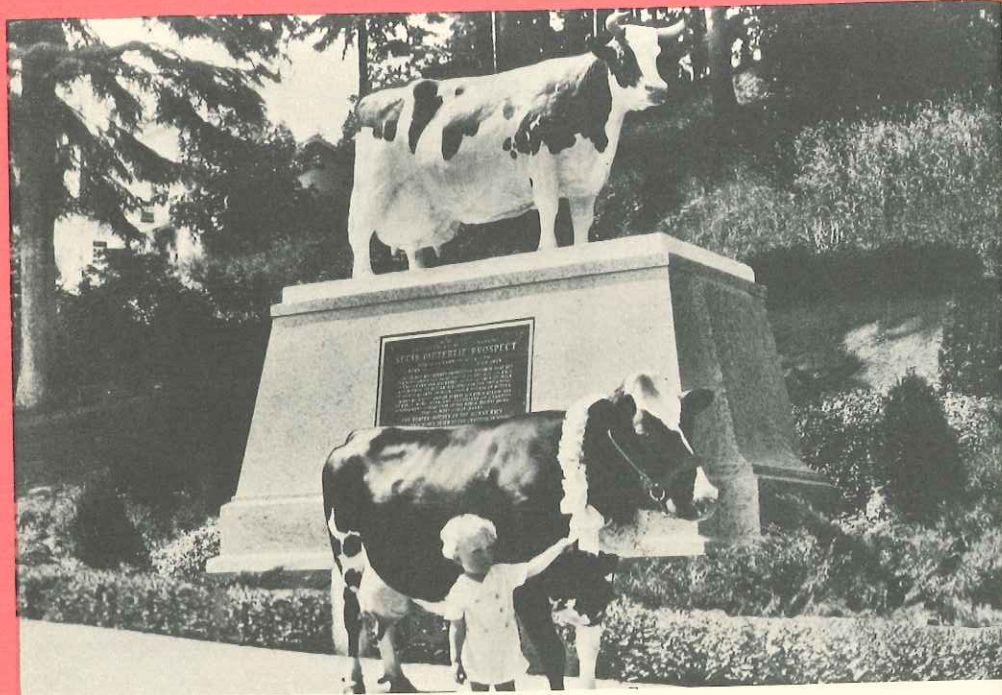
SURPRISED—"Our baby was brought into the world prematurely to save my life. He weighed only 4 pounds, and was kept in an incubator, and the doctor didn't expect him to live. . . . When I had sufficiently recovered to wonder what the baby was being fed, and worried for fear it was something terribly expensive, imagine my surprise

when the specialist handling the case told me that Mickey had been fed Carnation Milk right from the beginning! Now he's 7 weeks old, weighs 6½ pounds, and is gaining normally."—Mrs. C. V. Kopf, Rockford, Ill.





THE GREATEST LIVING MILK COW, CARNATION PROSPECT VEEMAN, BESIDE THE MONUMENT  
TO HER WORLD'S RECORD GRANDMOTHER, SEGIS PIETERTJE PROSPECT



and bred—are both contentedly living today in their native Carnation pastures near the monument of their illustrious ancestor!

These facts, of official record, are the best possible proof that the Carnation Company is genuinely interested in raising better cows, to give better milk. Going still farther, the company maintains a force of "field men" whose sole duty is to visit the fine farms that supply the many Carnation plants—to inspect the herds, to insist on the best possible care of the milk,

and to pass on the lessons in breeding and feeding that have been learned at Carnation's own record-breaking farm.

Now you see that high ideals of quality and of service to the public find expression in the evaporated milk industry just as they do in any other branch of business with which you are familiar.

#### PREPARING BABY'S BOTTLE

Now let us suppose that your doctor has prescribed a Carnation Milk formula for your baby. Here are a few suggestions which you

may find helpful:—

Carnation Milk is already sterile, so it is not necessary to boil or pasteurize it.

For the ordinary type of formula, first boil the required amount of water, allow to cool till warm, then add and stir in the sugar or other carbohydrate.

Next, take a sterile pitcher large enough to hold the entire formula and pour in the required amount of Carnation Milk. Then add the mixture of sugar and water and stir. The formula is then ready to pour into sterile nursing bottles.

When preparing an acid-milk formula it is best to mix the acid, carbohydrate, and water first. This mixture is then poured slowly into the milk, with continuous stirring.

Fill as many bottles as are needed for one day's feedings, using a sterile funnel. Then stopper the bottles with sterile cotton, corks, or rubber tops. The bottles should then be placed in the refrigerator till needed.



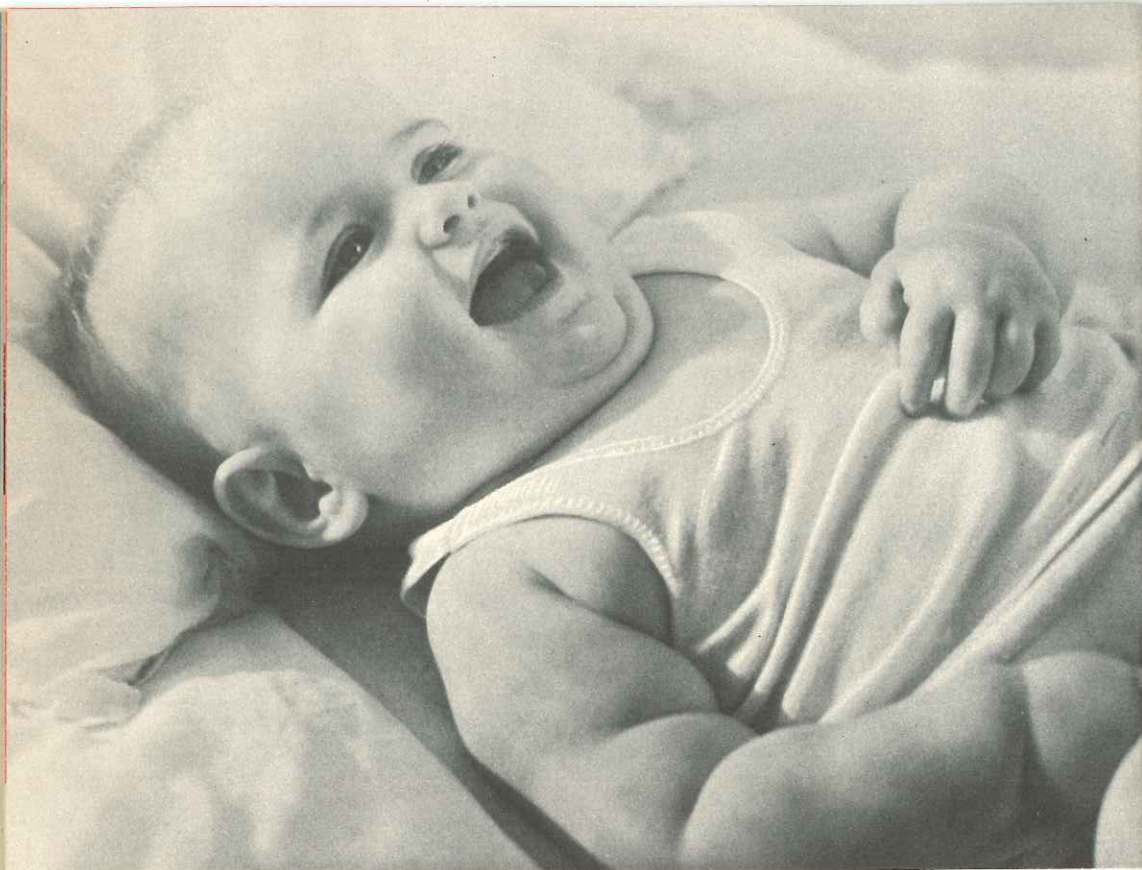
At feeding time, warm the bottle to blood heat, attach a sterile nipple, and serve. Test the temperature by letting a few drops fall on the wrist. The milk should not feel hot, or cold—just comfortably warm.

Note the number of times the word "sterile" has been used in these simple directions! That is because it is vitally important. There can be no disease germs in Carnation Milk, but carelessness in preparing the formula may undo

ALWAYS LAUGHING—"My baby boy was given up by the baby clinics six weeks ago. Then I was advised by a friend to take him to a noted hospital in the city—and the doctors there put him on a Carnation Milk formula. Since then he has gained 4 lbs.

8 oz. in six weeks. He is 5 months old now and weighs 12 lbs. 8 oz. He is always jolly and laughing and sleeps wonderfully well, and *before* he used to be very cross and sleepless."—Mrs. Jane Holley, Philadelphia, Pennsylvania.





all the foresight that has gone into making Carnation the purest possible milk for babies. There is just one safe rule to follow: Boil everything that's boilable!

*Some Other Suggestions*—Always measure milk and water in an accurately marked measuring cup or glass graduate. . . . Rinse bottles and nipples in cold water immediately after using. They are then much easier to clean. . . . In opening Carnation Milk, first wipe

the top of the can clean, then scald with boiling water. Then puncture two holes on opposite sides of the top with a sterile ice pick. . . . Nipples should be scrubbed with brush, soap, and water before boiling. Turn them inside out to make sure that all milk particles are removed. . . . The average baby takes the bottle better if the holes in the nipple are large enough to let the milk *drop rapidly*—but not flow in a stream—when the bottle is

inverted. If necessary, enlarge the holes with a red-hot needle.

#### CONTENTED MEAL-TIMES

Here are some hints on managing the baby's feedings in such a way as to keep both mother and baby happy.

Always make the feeding time a pleasant occasion. That is good psychology with infants just as truly as with adults.

Never force the baby to eat. He knows better than anyone else whether he wants more food. Remember that some perfectly normal healthy babies consume considerably less food than others. If the formula does not seem sufficient to satisfy the baby's hunger, let the doctor know so he can readjust it if necessary.

When offering new foods, never insist that the baby eat them the first time. These are strange foods to him; if he has not been in the habit of taking food from a spoon he may not even realize that the

spoonful of cereal or vegetable you offer him is food at all. It is easy to start bad appetite habits by insisting that he take new foods at once.

Even when a baby takes a new food rapidly, the amount given should be small at first until you are sure that the food agrees with him.

Babies often refuse part of their food during hot weather. Allow them to eat as they please, but offer extra quantities of boiled water.

Don't change the baby's formula because some other mother's baby is doing well on a different formula. And don't give your baby foods—or medicines!—just because some friend says her doctor recommended them. *Your* doctor may have different ideas, and he is the one who knows your baby.

Keep a record of your baby's growth. On the back cover of this booklet you will find a chart provided for this purpose. Fill in the blanks every month and you will have a valuable permanent record.

**THRILLED!**—"Our baby was put on a formula when 11 days old—was tried on every kind of formula imaginable, but continued at a standstill. At 5 months she was a pitiful little thing weighing only 13 pounds, though she was an 8½-lb. baby at birth. Finally the doctor put her on a Carnation formula, and

the results were miraculous. The first week she gained 2 pounds—and was I thrilled! She has continued to gain, and at 8 months weighs 21 pounds and is pronounced a perfect baby."—Mrs. L. A. Sellers, Port Arthur, Texas.





## Good Things for little folks to eat

Ask your doctor when your baby should be started on solid foods. Probably before he is many months old you will be told to give him, in addition to his orange or tomato juice, such foods as strained vegetables and cereal, egg yolk, stewed fruit pulp, meat broth, etc.

Later, you will find Carnation Milk ideal for preparing all the nourishing dishes in which milk plays a part. On the following pages are tested recipes which demonstrate the value of Carnation Milk in cooking, not only for Baby, but for all the family.



### MILK TO DRINK

Most children like the taste of diluted Carnation Milk unflavored. In preparing milk for drinking, use equal parts of Carnation Milk and water. A few drops of vanilla or a little spice and sugar may be added for variation. The spiced milk is good hot or cold.

### CEREAL

$\frac{1}{2}$  cup Carnation Milk     $\frac{1}{2}$  cup water  
1 tablespoon granular cereal, such as cream of wheat, barley, rice, farina, wheatena, ralston's, cornmeal or  
2 tablespoons flaked cereals, such as oatmeal

Bring milk and water to a boil. Add cereal and boil briskly 5 minutes. Then set pan over boiling water and continue cooking 30 to 60 minutes, depending upon the cereal.

There are cereals for infants on the market that require as little as  $\frac{1}{2}$  hour cooking over boiling water or 10 minutes boiling over direct flame.

### SOFT CUSTARD

2 eggs or 3 egg yolks    1 cup Carnation Milk  
4 teaspoons sugar        Milk  
Few grains salt            1 cup boiling water

Beat egg yolks. Add sugar, salt, Carnation Milk, then the boiling water. Stirring constantly, cook over hot water until mixture coats the spoon.  $\frac{1}{2}$  teaspoon vanilla may be added if desired. Yield: 1 pint of custard.

### MILK TOAST

$\frac{1}{2}$  cup Carnation Milk    2 slices toast  
 $\frac{1}{2}$  cup water

Mix Carnation Milk and water. Scald and pour over toast.

### TOMATO JUICE COCKTAIL

$\frac{1}{4}$  cup Carnation Milk     $\frac{3}{4}$  cup tomato juice  
 $\frac{1}{4}$  cup cold water        Salt

Mix milk and water. Pour the tomato juice into the milk, stirring vigorously. Add salt. Yield: 2 servings.

### MASHED POTATOES

Boil potatoes in jackets until tender. Remove skins. Mash or press through a ricer or coarse sieve. Season with a little salt and moisten with Carnation Milk. Beat until fluffy.

### ORANGE MILK SHERBET

$1\frac{1}{2}$  cups Carnation Milk    1 cup water  
2 cups sugar            2 cups orange juice  
Few grains salt            2 tablespoons lemon juice

Chill milk in ice cream can. Boil sugar, salt and water about 5 minutes. There should be 2 cups of syrup. Add orange and lemon juice and chill. Pour orange mixture slowly into cold milk. Freeze with 1:8 salt-ice mixture. Yield:  $1\frac{1}{2}$  quarts. If a mild flavored sherbet is desired, increase Carnation Milk to 2 cups.



### BAKED CUSTARD

4 eggs  
6 tablespoons sugar  
 $\frac{1}{8}$  teaspoon salt  
 $1\frac{1}{2}$  cups Carnation Milk  
 $1\frac{1}{2}$  cups boiling water  
 $\frac{1}{4}$  teaspoon vanilla  
Dash of nutmeg

Beat eggs. Add sugar, salt, milk, boiling water and vanilla. Pour into custard cups and sprinkle with nutmeg. Set in a pan containing sufficient hot water to come almost to the top of the cups. Bake in a moderate oven (350° F.) until knife inserted in center of custard comes out clean. Yield: 6 servings.

### SCRAMBLED EGGS

3 eggs  
 $\frac{1}{4}$  teaspoon salt  
 $\frac{1}{2}$  cup Carnation Milk  
1 tablespoon butter

Beat eggs. Add salt and milk. Melt butter in saucepan, then add egg mixture. Stirring occasionally, cook over hot water until firm, but not hard. Yield: 3 servings.

### WHITE SAUCE FOR CREAMED DISHES

1 tablespoon butter  
1 tablespoon flour  
 $\frac{1}{2}$  teaspoon salt  
 $\frac{1}{2}$  cup boiling water  
 $\frac{1}{2}$  cup Carnation Milk

Melt butter, blend in flour and salt and when smooth and bubbling add the boiling water. Stirring constantly, boil until mixture begins to thicken, then add Carnation Milk and continue cooking for a few minutes longer.

[ 26 ]

### CREAMED EGGS

Add 4 diced hard cooked eggs and a little chopped parsley to White Sauce for Creamed Dishes. Serve on hot buttered toast if desired. Yield: 3 servings.

### CREAMED VEGETABLES

To White Sauce for Creamed Dishes add 1 cup of any diced, cooked vegetable, such as potatoes, carrots, onions, spinach and turnips. Yield: 3 servings.

### CREAMED LIVER

Add 1 cup chopped cooked liver or beef, lamb, pork or fish to White Sauce for Creamed Dishes. Broth in which meat or fish is cooked may be used in place of water in preparing White Sauce. Yield: 3 servings.

### MEAT AND VEGETABLE CHOWDER

$\frac{1}{2}$  pound lean beef  
1 cup hot water  
 $\frac{1}{2}$  cup carrots  
 $\frac{1}{4}$  cup celery  
1 tablespoon chopped onion  
 $\frac{1}{2}$  cup potatoes  
 $\frac{1}{2}$  teaspoon salt  
 $\frac{1}{2}$  cup Carnation Milk

Put meat through food chopper. Add water and simmer in a covered saucepan until tender (about 1 hour). Add diced vegetables and cook until tender. Season with salt. Add milk and reheat. Yield: 3 servings.

### VEGETABLE SOUP

$\frac{1}{4}$  cup strained or pureed vegetable  
 $\frac{1}{4}$  cup water  
 $\frac{1}{4}$  cup Carnation Milk  
Pinch of salt

Combine ingredients and heat. Liquid drained from vegetables may be used in place of water.

### MEAT LOAF

1 pound ground raw meat  
1 egg  
 $1\frac{1}{2}$  teaspoons salt  
 $\frac{1}{2}$  cup finely chopped onion  
 $1\frac{1}{2}$  cups Carnation Milk  
2 cups bread crumbs

Mix ingredients. Turn into a well greased baking pan, shape into a loaf and bake about 30 to 45 minutes in a moderately hot oven. Yield: 8 servings.

### APPLE TAPIOCA

1 cup Carnation Milk  
1 cup water  
 $\frac{1}{4}$  cup minute tapioca  
 $\frac{1}{4}$  cup sugar  
2 apples  
5 tablespoons sugar  
2 tablespoons water  
2 egg yolks  
2 egg whites

Cook milk, 1 cup water, tapioca and  $\frac{1}{4}$  cup sugar over boiling water 15 minutes. Pare apples, cut in small pieces and boil with 5 tablespoons sugar and 2 tablespoons water until tender. Add with the beaten egg yolks to tapioca. Cook 3 minutes longer. Remove from fire and fold in the stiffly beaten egg whites. Yield: 6 servings.

### PRUNE OR APRICOT WHIP

1 cup Carnation Milk  
2 tablespoons lemon juice  
 $\frac{1}{2}$  cup powdered sugar  
1 cup pulp from stewed dried prunes or apricots

Whip milk until foamy. Add lemon juice slowly and continue whipping until stiff. Fold in the sugar and prune pulp. Serve cold. If milk is chilled previous to whipping a fluffier dessert results. Yield: 6 servings.

### SALMON LOAF

1 pound can salmon  
 $1\frac{1}{2}$  cups bread crumbs  
Liquor drained from salmon plus Carnation Milk to make 1 cup  
1 teaspoon salt  
1 egg

Flake salmon with a fork. Add remaining ingredients. Turn into oiled baking pan. Bake in a moderate oven (350° F.) until firm and brown, about 40 minutes. Yield: 8 servings.

### BREAD PUDDING

2 cups dry bread  
1 cup hot water  
1 egg  
1 cup Carnation Milk  
 $\frac{1}{2}$  cup sugar  
 $\frac{1}{2}$  teaspoon salt  
Cinnamon or nutmeg

Soak bread in the water. Add milk, beaten egg, salt and sugar. Sprinkle with cinnamon or nutmeg. Pour into buttered baking dish, set in pan of hot water and bake in a moderate oven (350° F.) until firm and brown on top, about 1 hour. Raisins, chopped prunes or apples may be added. Yield: 6 servings.

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### RICE CUSTARD PUDDING

1 egg                      ½ cup water in which  
4 tablespoons sugar      rice was boiled  
¼ teaspoon salt      ¾ cup boiled rice  
½ cup Carnation Milk      Nutmeg

Beat egg. Add sugar, salt, milk, water and rice. Pour into buttered baking dish. Sprinkle with nutmeg. Set in pan of hot water and bake in a moderate oven (350° F.) until a knife inserted comes out clean, about 60 minutes. Yield: 3 or 4 servings.

### EGG NOG

1 egg                      ¾ cup Carnation Milk  
Few grains salt      ¾ cup cold water  
1 tablespoon sugar      Few grains nutmeg  
or honey

Beat egg yolk until thick and lemon colored, and white until stiff. Add salt and sugar to yolk, combine well and add milk and water. Fold in the egg white, pour into glasses and sprinkle top with nutmeg. Yield: 2 servings.

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Make Irradiated Carnation Milk your *regular* milk for every use. Dilute it for drinking. Use it undiluted for creaming coffee, fruits, and cereals. And enjoy the *better results in all cooking* that are so easy to obtain with this creamy-smooth, rich-tasting milk. . . . Write

### OATMEAL COOKIES

1 cup fat, half butter      2 cups flour  
2 cups brown sugar      1 teaspoon soda  
2 eggs                      ¼ teaspoon salt  
2 cups rolled oats      2 teaspoons cinna-  
   mon  
⅓ cup Carnation Milk      ¾ teaspoon cloves  
and                      1 cup raisins  
1 teaspoon vinegar,      mixed

Cream fat and sugar together. Add eggs. Beat well, then stir in oats and milk. Sift flour, then measure. Resift with soda, salt and spices into first mixture. Mix well, adding raisins with last few stirs. Drop from a teaspoon onto an oiled baking sheet. Bake in a moderate oven (375° F.).

### COCOA

1 teaspoon cocoa      ¾ cup water  
1 teaspoon sugar      ½ cup Carnation Milk  
Few grains salt

Mix cocoa, sugar, salt and add water slowly, stirring to blend well. Boil 2 minutes, then add milk and heat thoroughly. Yield: 1 serving.

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## KEEP A RECORD OF BABY'S GROWTH

Record of \_\_\_\_\_

BORN \_\_\_\_\_ M. D.

AGE	BOYS		GIRLS		CHILD'S GROWTH	
	Average Stature, Inches	Average Weight, Pounds	Average Stature, Inches	Average Weight, Pounds	Stature, Inches	Weight, Pounds
At birth	..	..	..	..	.....	.....
1 month	22	10	21	9	.....	.....
2 months	23	12	23	11	.....	.....
3 months	24	13	24	12	.....	.....
4 months	25	15	24	14	.....	.....
5 months	26	16	25	15	.....	.....
6 months	26	17	26	16	.....	.....
7 months	27	18	26	17	.....	.....
8 months	28	19	27	17	.....	.....
9 months	28	19	27	18	.....	.....
10 months	28	20	28	19	.....	.....
11 months	29	21	28	19	.....	.....
12 months	29	21	29	20	.....	.....
13 months	30	22	29	20	.....	.....
14 months	30	23	30	21	.....	.....
15 months	31	23	30	22	.....	.....
16 months	31	23	31	22	.....	.....
17 months	31	24	31	22	.....	.....
18 months	32	24	31	23	.....	.....

PLEASE REMEMBER that these weights and heights are for *average* babies, and that normal babies *vary greatly*, according to their type of build. It makes no difference if your baby is above or below these figures, so long as he is healthy and gaining properly.



**MORE MILK IN**



**YOUR MEALS**



# WE SERVED 2500 MEALS TO CHILDREN

WHEN it was announced last summer that irradiated evaporated milk had been put on the market, so that any mother in the United States could go down to the grocer's and buy as many cans as she wanted, McCall's realized that a great big story had "broken." Vitamin D—the sunshine vitamin—the vitamin that is so vitally important to growing children, was now within reach of every home in the land. And at no extra cost, because the brands of milk to which this extra enrichment had been added, increased not one penny in price.

"What a story for mothers!" rejoiced one editor. "We'll tell our readers all about it and give them some recipes." "Wait a minute," protested our Master of Science, "just how sure are you that children *like* evaporated milk well enough to consume their quart a day?"

"It has been pretty well established that pre-school youngsters take to it kindly," somebody else said, "and we could ask a few of the mothers we know if they would try it on their families." "A grand idea," agreed the Director of Foods, "but it's not enough. We need more children, and we must work with them ourselves if our advice to mothers is to mean anything." "Exactly . . . we need to *live* with children for days on end" . . . Excitement gleamed in our science editor's eyes.

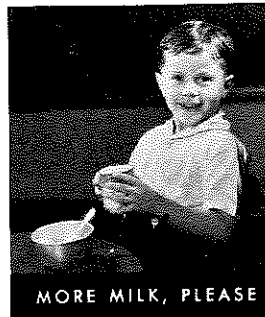
So that is how McCall's temporarily adopted a family of 150 boys and girls of all ages from four to sixteen, and served 2500 meals to them.

It put the problem up to two of its wisest, most sympathetic food experts, Beulah Gillaspie and Gertrude Lynn, and then invited as guest editor, Millicent Atkin of the Irradiated Evaporated Milk Institute in Chicago, who perhaps

has done more cooking with evaporated milk than anyone in the world!

The experiment is just now finished. It lasted five months and was divided into four groups—a study of the food preferences of girls from 6 to 16 years old; boys of the same age group; nursery school children; children at home in regular every-day families.

For three weeks our investigators moved up to Yonkers, New York, where, on a beautiful estate beside the Hudson River, they cooked for boys and girls of school age exactly as a mother would in an ordinary home. There in the remarkable Leake and Watts Home School, where youngsters romp with their pony over the wide grounds, and "dress up" and play dolls and tag and football as freely and happily as do children in the most indulgent households, McCall's experts mothered



the first two groups: 29 girls and later, 21 boys.

Day in and day out, these practice mothers (one of whom is a real mother) in their spic and span white uniforms did everything for their big family that the most devoted mother could do. They got up early to prepare a hot, substantial, seven-o'clock breakfast for hungry boys and girls. For surprises before lunch and supper, they sometimes served fruit-milk drinks. Best of all, in their unobtrusive way they got to know each individual girl and boy, and watched which foods he reached for and which he passed by, as well as what foods he left on his plate at breakfast, dinner and supper.

All in all, they believe, they encountered every type of feeding problem any child could offer.

Before they started, our staff spent many days concocting varied, appetizing



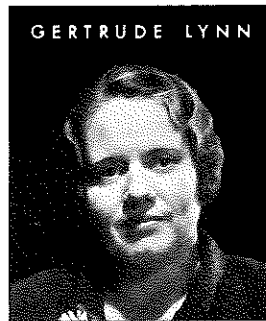
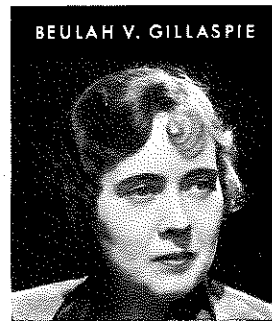
menus, containing all the food elements growing children need, yet working out recipes simple enough to be followed easily in any home kitchen. Each day's menus provided for at least the quart of milk that physicians strongly recommend for every growing boy and girl.

For your convenience we have summed up briefly on page 5 the important discoveries we made about what

boys and girls between 6 and 16 years of age like to eat. We've given you some of the most popular recipes, too. Next month we'll tell about the other two groups with whom our experimenters worked—forty-five children in a day nursery in a crowded section of New York City, and girls and boys of "assorted" ages from average families, who live at home with their parents.

• • •

Below are the three experts who conducted the tests. Miss Atkin, McCall's fifth guest editor, is Home Economics Director of the Irradiated Evaporated Milk Institute. Beulah Gillaspie and Gertrude Lynn belong to McCall's own food staff.



## THEY'LL LIKE THEIR MILK THIS WAY

**NO MOTHER** of an average youngster who studies the recipes and menus that McCall's tried out on its borrowed children ought ever again to have difficulty in having him take his "quart of milk a day." At one breakfast during the experiment, 21 boys consumed 14 quarts of milk—almost a quart apiece! Yet they were not aware of taking any more milk than usual. But their cereal was cooked in milk instead of water, and eaten with milk, and they drank cocoa made with milk.

On another day, for lunch, a pint of milk was given each child by including in the menu a tomato milk cocktail, creamed vegetable, milk dessert and a milk beverage.

Of the many things we discovered about children's food preferences, five facts stand out:

**1** Milk-rich menus are not expensive. We did our marketing at the corner grocer's just as most families do, so we made no savings by quantity buying. A mother who is anxious to make every penny stretch farthest can use irradiated evaporated milk—costing six or seven cents a tall can—for various cooking purposes and in many beverages. She will find this a decided saving.

**2** By and large, youngsters like the simple, homely things that are good for them. And especially they like milk—evaporated milk just as well as bottled milk. Many children up to the age of 12 or 13 (when they are apt to acquire adult food prejudices) will drink diluted evaporated milk and eat it on their cereal. Some children even like it better and they call it "cream."

**3** A child who does not like milk should not be forced to drink it "straight." His daily quota can easily be fed him in soups, sauces, cereals, desserts and mixed beverages. But most children, with their meals or between meals, like a glass of milk—served *cold*. Sometimes, as a special treat, they asked to have their malted milks or cereal drinks cold, instead of heated.

**4** Children are natural conservatives. We learned that it was wise to serve them a small portion of a new dish, instead of a forbidding quantity that they feared they might not like. There is all the difference in the world in a child's future attitude toward a food if, instead of being urged to finish a hopelessly big first serving, he asks, of his own accord, for more.

**5** A well child, who has not been prejudiced by adult dislikes or lecturing, likes wholesome foods—prunes and apricots and apple sauce and coleslaw and spinach, for instance. Rice custard pudding, made with irradiated evaporated milk and served with brown sugar sauce, was the most popular dessert. For it, more than for any other dessert, the children asked for second helpings.

When McCall's "children" turned down a food that we thought they needed, we didn't nag: we simply tried some other way of serving it. One morning the bright idea came to us of baking crusty corn meal muffins for the girls. To our surprise they met with a chilly recep-



tion. The next time, therefore, we baked the usual sheet of corn bread—and it went like the proverbial hot cakes. A few experiences like this taught us to leave well enough alone—a hint that long-suffering husbands may appreciate!

In general, the children showed aversion to foods that were hard or clumsy to eat. Apple sauce they liked better than baked apples; more salad was eaten when the lettuce was shredded instead of being served in large, unwieldy leaves. If your child dislikes a perfectly good food, we suggest that you find an easier-to-eat, more attractive way of serving it.

With children over six, variety is the best policy. The indulgent mother who, to please her child, keeps on repeating his favorite dessert, will soon find him bored with it. It is better strategy to lead him to anticipate food surprises, so that he will tiptoe up to whisper, as did the children in this experiment: "Please tell me—what's the dessert tonight?"

**WHAT** was McCall's magic? What tricks did we use to make these youngsters consume all the milk the strictest dietitian could prescribe?

Our recipes, as you will see, were simplicity itself, just the sort of family fare millions of American mothers are preparing every day. But three things we did which do not always occur to mothers. First, we avoided monotony. Even at breakfast we served a different fruit, a different cereal, a different main course every day in the week.

Next, we made every dish look as appetizing as we knew how. We remembered that chocolate shot, cherries or a bit of jelly give a home-y old stand-by all the airs of a birthday surprise. Boys, as well as girls, we found, watch for these touches. One day when we had only half a maraschino cherry to put on each serving of chocolate dessert, a little chap looked up ruefully. "Oh, dear," he sighed, "we thought the cherry was going to be round!"

Finally, we seldom cooked with water when milk could be used to give a dish added nourishment. The children loved the extra richness of the milk-made

dishes. The first morning that we tried oatmeal cooked in milk, three-quarters of the youngsters had second helpings. "This is the best cereal we ever ate," they said.

Note—Irradiated evaporated milk was used in originating all of the following recipes:

#### PRUNE MILK DRINK

1 cup evaporated milk diluted with 1 cup water  
2 cups prune juice  
1 teaspoon lemon juice

Combine ingredients and stir well or shake vigorously.

#### TOMATO MILK COCKTAIL

1 cup evaporated milk  
Few grains salt  
2 cups tomato juice  
Few grains pepper

Combine ingredients and stir well or shake. For adults, season with celery salt, Tabasco or Worcestershire sauce.

#### PINEAPPLE MILK DRINK

1 cup evaporated milk diluted with 1 cup water  
1 cup pineapple juice  
1/3 cup lemon juice  
3 tablespoons sugar  
Few grains salt

Combine ingredients and stir well or shake vigorously.

#### ORANGE MILK DRINK

1 cup evaporated milk  
2 cups orange juice  
3 tablespoons sugar  
Few grains salt

Combine ingredients and stir well or shake vigorously.

#### COCOA

2 1/2 tablespoons cocoa  
2 1/2 tablespoons sugar  
Few grains salt  
1/2 cup boiling water  
2 cups evaporated milk diluted with 2 cups water  
1/4 teaspoon vanilla

Mix cocoa, sugar, salt and boiling water together. Boil 3 minutes. Add scalded diluted evaporated milk and vanilla. Beat with a rotary egg beater until the mixture is frothy.

#### SALMON LOAF

1 pound can salmon  
Evaporated milk  
1 cup soft crumbs  
1 teaspoon salt  
1 egg  
Few grains pepper

Drain liquid from salmon and add enough evaporated milk to the liquid to

make 1 cup. Mix salmon, crumbs, liquid, salt, beaten egg and pepper together. Pack in a greased loaf pan. Bake in a moderate oven (350° F.) 35 to 45 minutes or until firm.

#### MEAT LOAF

1 1/2 cup soft crumbs  
3/4 cup evaporated milk  
1 teaspoon salt  
2 tablespoons chopped onion  
Few grains pepper  
1 egg  
1 pound chopped beef  
2 tablespoons chopped onion

Mix together crumbs, evaporated milk, salt, pepper and beaten egg. Let stand a few minutes or until crumbs have absorbed the liquid. Add chopped beef and onion, and mix well. Pack in a greased loaf pan. Bake in a moderate oven (350° F.) 35 to 45 minutes or until baked through. For children, the chopped onion may be omitted from this recipe if desired.

#### SCRAMBLED EGGS

6 eggs  
3/4 teaspoon salt  
Few grains pepper  
3/4 cup evaporated milk  
Paprika

Break eggs into top part of a double boiler and puncture yolks. Add salt, pepper and evaporated milk. As the mixture cooks, lift over with a fork or spatula until the whole is coagulated or set. Sprinkle with paprika. No butter is needed.

#### MACARONI AU GRATIN

1 9-ounce package macaroni  
2 eggs  
2 cups evaporated milk diluted with 1 cup water  
1 cup cheese, grated

Cook macaroni in boiling salted water until tender. Drain. Beat eggs, and add diluted evaporated milk and cheese. Add to the macaroni. Pour into a greased baking dish. Set in a pan of hot water and bake in a moderate oven (350° F.) about 60 minutes or until set.

#### CREAMED CABBAGE

2 1/2 cups cooked cabbage  
2 tablespoons fat  
2 tablespoons flour  
1/8 teaspoon salt  
Few grains pepper  
1/2 cup evaporated milk diluted with 1/2 cup water

To cook cabbage, shred very fine and cook in a large amount of boiling salted water about 7 minutes or until tender.

Drain well. Heat fat, add flour, salt and pepper. Add diluted evaporated milk and cook over hot water, stirring constantly, until thick. Add cabbage and heat thoroughly.

#### CREAMED POTATOES

3 tablespoons fat  
3 tablespoons flour  
1 cup evaporated milk diluted with 1 cup water  
Few grains salt  
Few grains pepper  
2 1/2 cups cooked potato cubes

Heat fat, add flour and stir until smooth. Add diluted evaporated milk, salt and pepper, and cook over hot water until thick, stirring constantly. Add potato cubes and heat thoroughly. If desired, 1/4 cup grated cheese or 1/2 teaspoon grated onion may be added to the sauce just before the potatoes are put in.

#### MASHED POTATOES

Cook potatoes until soft and press through potato ricer. Add a little hot evaporated milk (undiluted). Season with salt and pepper and beat until fluffy. When undiluted evaporated milk is used, butter can be omitted.

#### CABBAGE SALAD

1/2 cup sugar  
1/2 teaspoon dry mustard  
1/2 teaspoon salt  
Few grains pepper

1 egg  
1/2 cup evaporated milk  
1/2 cup vinegar  
Shredded cabbage  
Mix sugar, mustard, salt and pepper together. Add beaten egg and evaporated milk. Add vinegar slowly, and bring to the boiling point over a low heat, stirring constantly. Chill. Mix the chilled dressing with the shredded cabbage. Serve immediately.

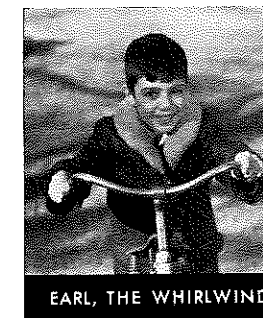
#### CHOCOLATE BLANC MANGE

2 squares or 2 ounces unsweetened chocolate  
2 cups evaporated milk diluted with 1 cup water  
2 tablespoons cornstarch  
1/2 cup sugar  
1/2 teaspoon salt  
1/3 cup cold water  
2 eggs  
1 teaspoon vanilla

Melt chocolate over hot water. Add diluted evaporated milk and heat. Mix cornstarch, sugar and salt with the cold water. Add to the hot mixture. Cook over hot water until thick, stirring constantly. Cover and cook about 20 min-



TIME FOR BABY'S NAP



EARL, THE WHIRLWIND

utes. Pour over the beaten eggs. Return to double boiler and heat 2 minutes. Add vanilla and pour into molds. Chill.

#### OATMEAL COOKED IN MILK

2 cups evaporated milk diluted with 2 cups water  
2 cups water  
1 teaspoon salt  
2 cups oatmeal

Bring diluted evaporated milk to boiling point. Add salt and oatmeal and boil 3 minutes, stirring constantly.

#### RICE CUSTARD PUDDING

2 eggs  
1/2 cup sugar  
1/4 teaspoon salt  
1/2 teaspoon vanilla  
1 cup evaporated milk diluted with 1 cup water  
1 cup boiled rice

Beat eggs, add sugar, salt and vanilla. Stir well. Add diluted evaporated milk and rice. Pour into a greased baking dish. Sprinkle with nutmeg and cinnamon. Set in a pan of hot water and bake in a moderate oven (350° F.) about 1 hour, or until set. Cool before serving.

#### CORN PUDDING

2 eggs  
1 1/2 cups corn  
1 teaspoon salt  
1 tablespoon sugar  
Few drops onion juice  
Dash paprika  
2/3 cup evaporated milk diluted with 2/3 cup boiling water

Beat eggs, add corn, salt, sugar, onion juice, paprika and diluted evaporated milk. Pour into a greased baking dish, set in a pan of hot water and bake in a moderate oven (350° F.) 45 minutes or until firm.

#### SCALLOPED VEGETABLES

3 tablespoons fat  
4 tablespoons flour  
1 1/4 cups evaporated milk diluted with 1 1/4 cups water  
1 teaspoon salt  
Few grains pepper  
1 3/4 cups cooked or canned peas  
1 3/4 cups cooked celery  
1 3/4 cups cooked or canned carrots  
2 cups buttered crumbs

Heat fat, add flour and diluted evaporated milk, salt and pepper and cook over hot water, stirring constantly, until thick. Add peas, celery and carrots. Pour into a greased casserole and sprinkle top with buttered crumbs. (Grated cheese may also be used if desired.) Bake in moderate oven (350° F.) 25 to 30 minutes until crumbs are delicate brown.

#### PINEAPPLE ICE CREAM

1 egg  
1/2 cup sugar  
2 cups evaporated milk diluted with 1 cup water  
2 tablespoons maraschino cherry juice  
1/2 teaspoon salt  
1 1/2 cups crushed pineapple (pulp and juice)  
1 teaspoon vanilla

Beat egg, add sugar, diluted evaporated milk and salt. Add pineapple, vanilla and cherry juice. Mix well, pour into a freezer and freeze using 8 parts ice and 1 part salt.

#### CUP CUSTARD

2 eggs  
3 tablespoons sugar  
Few grains salt  
1 cup evaporated milk diluted with 1 cup water  
1/2 teaspoon vanilla  
Nutmeg

Beat eggs, add sugar and salt. Add diluted evaporated milk and vanilla and mix well. Pour into individual baking cups. Sprinkle with nutmeg. Set in a pan of hot water. Bake in a moderate oven (325° F.) about 20 to 30 minutes or until set.

#### HAM LOAF

1/2 cup evaporated milk diluted with 1/2 cup water  
1 cup oatmeal  
1 egg  
Few grains pepper  
1/2 pound chopped ham  
1/2 pound chopped pork

Pour the diluted evaporated milk on the oatmeal and let stand 10 minutes. Add egg and pepper and mix. Add the ham and pork and mix well. Pack into a greased loaf pan. Bake in a moderate oven (375° F.) about one hour. If desired a little brown sugar can be sprinkled on the top of the loaf and a few whole cloves stuck into the surface before the loaf is baked.

#### CREAMED CELERY AND CARROTS

2 cups celery  
2 cups carrots  
Few grains pepper  
1/2 cup evaporated milk  
Few grains salt

Steam celery and carrots or cook in a small amount of water, until tender. Remove cover and cook off excess liquid. Add hot evaporated milk. Season with salt and pepper.

When undiluted evaporated milk is used in this way it takes the place of a cream sauce. Butter is not needed when undiluted evaporated milk is used.



IT'S SATURDAY—HOORAY!

# MORE MILK IN YOUR MEALS

LAST month we told how 50 boys and girls each consumed more than a quart of milk a day in soups, sauces, drinks and desserts which we made for them with the new irradiated evaporated milk. If you read that account you may have said to yourself, "It's interesting and sounds easy, but would my children—and Dad—like it?"

We believe we know the answer. Fifteen families have just finished testing some of our best irradiated evaporated milk recipes. City families, country families, suburban families. Together they have 55 children, from four to eighteen years of age, and 42 adults with, seemingly, every kind of food prejudice known.

Some families have to cope with the medley of tastes and food habits that come with seven children or with five adults! Others have the sometimes equally vexing problem of feeding an only child. There are grandparents, uncles and aunts. Among them was a more than average proportion, it seemed, of husbands and children who have not liked milk.

McCall's took great care not to influence the verdict. We ourselves did not cook the food this time as we had for the children in the home-school. We simply handed the recipes over to cooperating homemakers to use in their own kitchens. Some of the mothers were skillful cooks; others were less expert. So the recipes had just the same chance that any others would.

All we asked was that each family should try at least eight of eleven reci-

#### THESE ARE THE FACTS:

For years McCall's has preached the gospel of more milk—at least a quart a day for children, a pint for adults.

Recently a spectacular thing has happened. Vitamin D, the sunshine vitamin, was added to evaporated milk. Milk thus enriched is labeled "irradiated" on the can. It is cheap—about 7 cents a tall can.

To find out how children like it, McCall's food staff and a Guest Editor, Millicent Atkin, cooked and served 2,500 meals to boys and girls of all ages. Adult volunteers numbered 62.

The foods containing evaporated milk met with almost unanimous praise.

During weeks of experimenting we learned how to make milk-rich meals a success. Some of our best recipes are included here.

pes which we gave them, all of which contained generous quantities of irradiated evaporated milk. Five of the recipes were for main dishes, four for desserts; two for beverages. After these had been served, the mother was asked to write down with unsparing frankness her family's reactions.

McCall's waited with some trepidation. Here were families, many of them unfamiliar with irradiated evaporated milk; perhaps they would not gobble up milk-rich dishes as did the children about whom we told you last month. But as the returns came in, our faces beamed; our mail-bag bulged with cheerful comments like these, right from home dinner tables:

"James and Bill both said: 'Boy! is this good! May I have more?'"



"Even David ate some, and he is very hard to please and really has to be made to eat."

"Husband, daughter, carpenter, colored maid and myself all endorse this dish."

"The children nearly fought for more."

"Served this to guests and they thought this the very best banana cream pie they had ever eaten."

"Lynn had a little friend in for lunch and he had three servings of this dish. 'I wish my mother would make this for me,' he said."

Whole families—children and adults—will take plenty of milk, and like it, when it is used in delicious recipes. Seven of the dishes—ham loaf, chicken and rice, baked noodles and cheese, and all four desserts—were almost unanimously praised by the "testers."

"The day I baked noodles and cheese," wrote one mother, "my husband unexpectedly did not get home for supper. But the children and I ate every bit. When my husband heard afterward what we had to eat that night, he said: 'I'm glad I didn't come home. That's one dish you're not going to test out on me.'"

"About a week later I tried it again, not saying what it was. After the first mouthful, my husband said: 'So you fooled me!' When that serving was finished he came back for more."

Again and again children in these families referred to the cold drinks and puddings as "ice cream." Cocoa milkshake tasted so much like it that several children begged to have this beverage kept in the refrigerator "all made up," so that they could help themselves when they wished. The apricot ice cream, one mother said, was "just as good as when I make it with cream." Some hot dishes, too, certain families thought, seemed richer than when made with bottled milk.

In the seven most popular dishes, when any objection was brought up, it was by some lone individual who had a dislike for one of the ingredients other than milk, or who found fault with a

texture against which he had had a long-standing prejudice. Some children objected to celery or asparagus, for instance, or thought baked egg plant was a "queer" color.

One good rule for mothers seems to be: If you are trying to convert a child or adult to a new food, or to one he does not enjoy, associate it with some ingredient that he really likes, rather than with something for which he has no enthusiasm.

We wish that space permitted us to tell you all about our experience with some very little children just before we began our work with families. In a charming day nursery in a congested section of New York City, we cooked and served 2 meals a day for 3 days to 45 boys and girls.

Here, too, we fed them large quantities of milk without their knowing it. We cooked their cereal in it, and served it in soups and desserts which they especially liked.

Theoretically one or two held out to the end. As one little black-eyed diehard remarked stoutly: "I don't like evaporated milk"—and held out her plate for a third serving of peach bavarian cream which was made almost

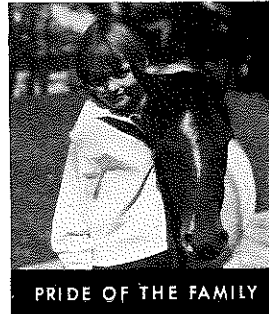
entirely of it!

The recipes that follow are among those McCall's children and families liked best. All are made with irradiated evaporated milk.

#### CHOCOLATE TAPIOCA PUDDING

1 square or 1 ounce of unsweetened chocolate	1 cup evaporated milk diluted with 1 cup water
1/4 cup sugar	2 egg yolks
1/8 teaspoon salt	1 teaspoon vanilla
3 tablespoons quick tapioca	2 egg whites
	4 tablespoons sugar

Melt chocolate over hot water. Add sugar, salt, tapioca, and diluted evaporated milk. Continue cooking over hot water, stirring constantly, until thick. Pour over the beaten egg yolks, return to double boiler and cook 2 minutes longer. Add vanilla. Pour into greased, shallow baking dish. Cover top with a meringue made by beating egg whites



PRIDE OF THE FAMILY

until stiff and folding in 4 tablespoons sugar. Bake in a slow oven (300° F.) about 15 minutes or until meringue is a delicate brown.

#### COCOA MILK SHAKE

1/3 cup cocoa	Few grains salt
1/3 cup sugar	1/4 teaspoon vanilla
1 cup boiling water	Diluted evaporated milk

Mix cocoa and sugar together, add boiling water and boil 5 minutes. Add salt and vanilla. Cool and store in a covered glass jar in the refrigerator. Add 3 or 4 tablespoons of the cocoa syrup to 1 cup diluted evaporated milk (evaporated milk diluted with equal quantity of water.). Stir well or shake.

#### BAKED NOODLES AND CHEESE

1 tablespoon fat
2 tablespoons flour
1/2 teaspoon salt
Few grains pepper
1 cup evaporated milk diluted with 1 cup water
3 1/2 cups cooked noodles (9 ounce package)
1 1/2 cups grated cheese
1 cup soft crumbs, buttered

Heat fat, add flour, salt and pepper. Add diluted evaporated milk and cook over hot water until thick, stirring constantly. Put a layer of noodles in bottom of a greased casserole; add a layer of sauce and cheese. Continue until all the ingredients are used. Cover top with buttered crumbs. Bake in a moderate oven (375° F.) about 25 minutes or until crumbs are a delicate brown. Serve immediately.

#### SCALLOPED RICE AND CHICKEN

1 tablespoon fat	1 1/2 cups evaporated milk diluted with 1 1/2 cups water or chicken stock
2 tablespoons flour	2 cups boiled rice
1 teaspoon salt	1 cup buttered soft crumbs
Few grains pepper	
2 cups cooked chicken, cut fine	

Heat fat, add flour, salt and pepper. Add diluted evaporated milk and cook over hot water, stirring constantly, until thick. Add rice and chicken. Pour into a greased casserole. Sprinkle top with crumbs. Bake in a moderate oven (375° F.) 25 minutes or until crumbs are browned. Serve immediately. Adults

may prefer this dish curried. To do this, add 1 to 2 teaspoons curry powder with the flour.

#### APRICOT ICE CREAM

1/2 cup evaporated milk	1 egg yolk
1/4 teaspoon gelatine	1/2 cup sugar
1 tablespoon cold water	Few grains salt
1/2 cup evaporated milk diluted with 1/2 cup apricot juice	1 cup apricot pulp
	1/2 teaspoon almond flavoring
	1 egg white

Scald evaporated milk over hot water. Sprinkle gelatine over the cold water, add to the hot evaporated milk and stir until dissolved. Chill. Add the diluted evaporated milk to egg yolk slowly and mix until blended. Add sugar and salt; cook over hot water, stirring constantly, until thoroughly heated. Add apricot pulp and flavoring. Chill. Whip chilled evaporated milk and egg white; fold into apricot mixture. Pour into freezing tray of mechanical refrigerator. Stir occasionally until the mixture is frozen.

#### BANANA CREAM PIE

Plain pastry
1/2 cup sugar
7 tablespoons flour
Few grains salt
1 cup evaporated milk diluted with 1 cup water
2 egg yolks

1 tablespoon lemon juice	3 bananas
3/4 teaspoon vanilla	2 egg whites
	4 tablespoons sugar

Line a pie pan with pastry and prick with tines of a fork. Bake in a hot oven (425° F.) until a delicate brown. Mix sugar, flour and salt together. Moisten with a little diluted evaporated milk. Add egg yolks and mix thoroughly. Add the remaining diluted evaporated milk. Cook over hot water, stirring constantly, until thick. Cover and cook 10 minutes longer. Remove from heat. Add lemon juice and vanilla. Slice bananas, add to the cream filling and pour into pastry shell. Cover top with a meringue made by beating the egg whites until stiff and folding in the sugar. Bake in a slow oven (300° F.) about 15 minutes or until a delicate brown. Cool. Some of the pie filling can be saved out for small children's dessert and the pie made up for adults.



I'M OFF TO SCHOOL



WILSON MILK COMPANY, INC. • INDIANAPOLIS, INDIANA

Member of Irradiated Evaporated Milk Institute

PRINTED  
IN  
U.S.A.

# Infant Feeding

WITH

## WILSON'S

IRRADIATED • UNSWEETENED

EVAPORATED

## MILK

Exclusively for Physicians



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## Foreword

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THIS handbook has been prepared by a well-known physician who has for many years prescribed Wilson's Evaporated Milk for well and sick babies, in private practice and in hospital and other institutional work.

It is offered as a guide to physicians who recommend *Irradiated* Evaporated Milk, and to those who wish to know more about this excellent infant food, in order that they may better serve their patients. The distribution of this book is confined to physicians; formulas are not furnished to the laity.

The statements made in this book, as well as Wilson's Irradiated Evaporated Milk itself, have been accepted by the Committee on Foods of the American Medical Association.



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## I. The Advantages of Irradiated Evaporated Milk in Infant Feeding

EVAPORATED MILK has been produced commercially since the middle of the 19th century. Until recent years its main use has been in cookery requiring milk. In 1929 Marriott and Schoenthal reported their spectacular results with the use of evaporated milk in infant feeding. Since then, in hospitals, clinics and general practice, physicians have used evaporated milk for infant feeding and have reported favorable results. Extensive scientific investigation and carefully controlled clinical research have been carried out to determine the value of this milk in infant feeding. The statements made about this product have been verified by experiments both laboratory and clinical.

Since June, 1934, Wilson's Evaporated Milk has been reinforced in its nutritive value by the use of ultra-violet irradiation. The Committee on Foods of the American Medical Association has accepted this statement.

"The vitamin D content of Irradiated Evaporated Milk is increased by direct irradiation with ultra-violet rays (U. S. Patent 1680818 under license from the Wisconsin Alumni Research Foundation) making this a potent vitamin D milk for infants and children and for the special nourishment of bones and teeth by promoting a more efficient utilization of calcium and phosphorus."

Some of the practical advantages of Wilson's Irradiated Milk for infant feeding may be summarized in the following statements.



Ample proof for these statements will be given in the discussion of the preparation and composition of the milk.

Wilson's Irradiated Milk is not a patented or proprietary food. It is an easily digested, palatable milk, free from bacteria, and of uniform composition and quality. This gives it a distinct advantage over variable bottled milk. Wilson's Milk is economical—irradiation does not increase the cost to the consumer. Mothers can easily prepare formulas with this milk under the direction of the physician.

Due to the increased scientific knowledge of the properties of Irradiated Evaporated Milk the physician's attitude is changing. Instead of questioning the effects of processing the milk he is now realizing the extent to which the milk is improved by the processing.

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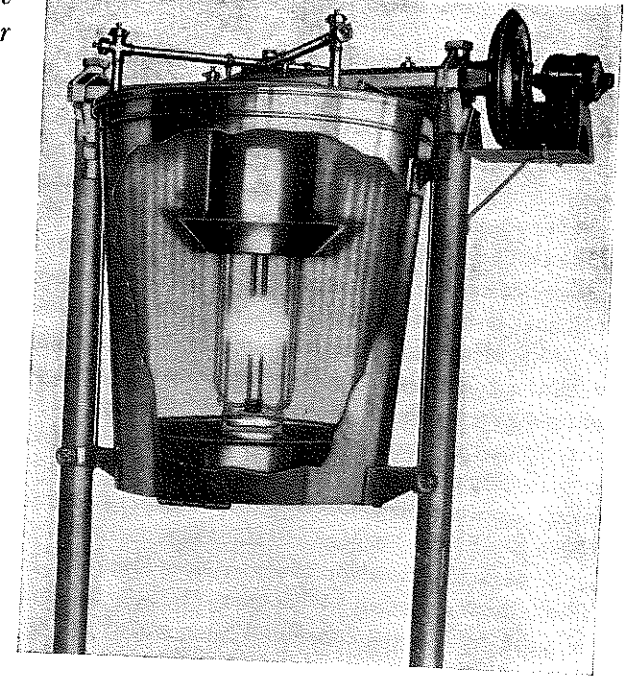
## II. Processing the Milk

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**W**ILSON'S Irradiated Milk is prepared from clean, fresh whole milk. It is milk produced from herds of various breeds of tuberculin-tested cows kept in clean, inspected dairies. The quality of the fresh milk is a most important factor in the successful production of marketable evaporated milk. In order to have a uniform, fresh, clean milk a corps of field men is employed to regularly inspect the sources of supply. The original composition and character of the milk is dependent upon the breed of cattle supplying the milk, the season of the year, the period of lactation, feed of the cows and care in handling of the milk after it is drawn.

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*The  
Irradiator*



At the dairy the fresh milk is immediately strained through a cotton filter into large cans and kept at proper temperature until it is delivered to the condensery fresh each morning. Here it is tested for freshness, proper cooling, high acidity, bacteria count and sediment deposit. It is rejected if it fails to meet the requirements. This high grade milk is then ready for the processing which will render it more digestible.

The milk is quickly heated and then drawn into large vacuum evaporating pans. Here it boils in a partial vacuum at a low

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temperature of 150°F. until 60% of the water content has been removed.

The evaporated milk is then irradiated by the Steenbock process (U. S. Patent 1680818 under license from the Wisconsin Alumni research foundation). The principle of this method is to expose a thin, flowing film of milk to ultra-violet rays of measured wave-length and intensity, emanating from either a carbon or a mercury arc lamp. The process is carefully controlled so that the milk will be irradiated with 135 U. S. P. units of vitamin D to 16 ounces of milk. Irradiation causes no important changes in the physical or chemical properties of the milk.

A high pressure pump then forces the milk through a machine called the homogenizer. This process breaks up the large fat globules into minute globules which remain evenly distributed throughout the milk. For this reason Wilson's Evaporated Milk has no "cream line."

The milk is then cooled and by means of a sanitary filling machine is measured accurately into cans each of which is automatically sealed with a drop of solder. It is marketed in two size cans. The tall cans contain 14½ ounces (by weight) or 13 fluid ounces and the small cans contain 6 ounces (by weight) or 5½ fluid ounces.

The sealed cans are tested for air leakage or other defects, and then are carried on a belt into the sterilizer. The cans revolve here for at least 15 minutes at a temperature of 240°F. This process insures sterilization of the milk and partially changes the structure of the curd-forming part of the milk, making it more digestible. It has no effect on the heat-stable vitamin D.

Following sterilization the cans are cooled, labeled and packed for shipping.

### III. Composition of Wilson's Irradiated Evaporated Milk

As has been noted, the composition of the fresh milk brought to the condensery is subject to variations. In order to meet government requirements and to insure a product of uniform composition, each tank of milk is tested on the basis of the Mojonnier test. The milk must contain not less than 7.8% butter fat, nor less than 25.5% total milk solids. The government standard and commercial practice permit only a slight deviation above these minimums. However, the sum of the percentages of the butter fat and milk solids must not be less than 33.7%.

A comparison of the average composition of Wilson's Evaporated Milk, cow's milk, and breast milk is given in the following table:

	Wilson's Milk (Undiluted)	Cow's Milk	Breast Milk
Butter Fat.....	7.84%	3.5 to 4 %	4 %
Carbohydrate.....	9.92%	4.5%	7 %
Protein.....	6.89%	3.5%	1.25%
Minerals.....	1.52%	.75%	.25%
Water.....	73.83%	87.8%	87.5%
Approximate Caloric Value per ounce (fluid).....	43	20	20



Wilson's Irradiated Evaporated Milk diluted with equal parts of water contains slightly more nutritive value than ordinary milk.

### BACTERIOLOGY

Wilson's Irradiated Evaporated Milk is sterile and cannot, therefore, cause infectious diarrhea or milk-borne diseases. Deming and Davis make the following statement:

"It appears that evaporated milk, as purchased in the local market, is not only free from pathogenic microorganisms, but may, for all practical purposes, be considered sterile.

From the bacteriological standpoint, evaporated milk may be considered a safe food for use in infant feeding."<sup>1</sup>

In an article on the elimination of milk-borne diseases, Davison concludes:

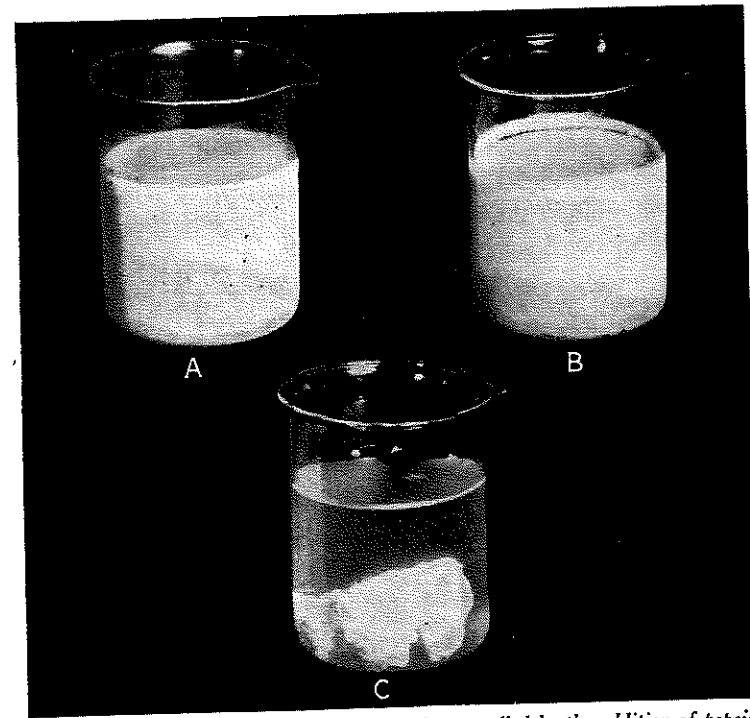
"The evaporation process employed . . . removed the risk of Brucella infection (undulant or Malta fever), diphtheria, foot and mouth disease, scarlet fever, septic or streptococcal sore throat, tuberculosis, typhoid and paratyphoid A and B fever and other diseases which can be spread from a dairy."<sup>2</sup>

### CHEMICAL ANALYSIS

The processing of Wilson's Irradiated Evaporated Milk renders it more easily digested than raw milk or milk boiled only a very short time. Williams and Kastler from their work conclude:

"The results in nutrition and growth obtained by feeding fresh cow's milk and evaporated milk formulas were almost identical. Evaporated milk being more easily digested than fresh cow's milk, caused fewer gastrointestinal upsets and was less difficult to feed."<sup>3</sup>

Extensive research has been carried on to discover what changes occurred in the milk to bring this about. It has been



*Each has been curdled by the addition of pepsin.*

#### *Comparison of curds from:*

A—Breast milk. B.—Irradiated Evaporated Milk mixed with an equal amount of water. C—Pasteurized milk.

Breast milk and diluted irradiated evaporated milk remain liquid with a suspension of extremely fine curds. The pasteurized milk curdles into a solid mass. During the precipitation by pepsin, the milks were stirred constantly. This approximates the conditions occurring in the infant's stomach. Boiled milk produces curds which are intermediate in size and texture between those of evaporated milk and pasteurized milk.

found that the casein of the milk is changed by heating. The casein molecule surrenders some of its soluble calcium. As a result, when acted upon by digestive ferments, particularly rennin, the casein of heated milk forms a softer more flocculent precipitate or curd which is more easily digested and assimilated than the casein curd of raw milk.

The albumin of the heated milk is in a large part coagulated but this does not disturb its digestibility.

There are changes in the whey proteins which renders Wilson's Milk less allergic than raw milk.

There are no chemical changes in the butter fat. Homogenization breaks the fat globules into minute particles which can be more readily acted upon by the digestive enzymes, particularly the bile.

The milk sugar of the milk is partially caramelized by the sterilization but is in no way rendered indigestible. Caramelization does somewhat alter the taste of the milk.

Analysis of the mineral ash of milk before and after evaporation is conclusive evidence that none of the minerals are lost during the processing. Willard and Blunt<sup>4</sup>, Kramer *et al*<sup>5</sup>, and Jeans and Stearns<sup>6</sup> have all worked on this problem. They conclude that evaporated milk can be given a very high rating in the ease of utilization of calcium, phosphorus and nitrogen.

## VITAMIN CONTENT

Wilson's Irradiated Evaporated Milk contains approximately the same vitamins as pasteurized or raw cow's milk and, in addition, a rich supply of vitamin D. This statement, fully proven by clinical research, should refute one of the frequent objections to the use of heated milk. Rosenow, Jeans, Steenbock and nu-

merous other workers have reported the results of their research on this subject.

Milk is a rich source of vitamin A. Farmer and Lemkau found that this vitamin was present in evaporated milk to the same extent as in the original milk. Bender and Suplee<sup>7</sup> report that direct irradiation by controlled methods causes no significant destruction of vitamin A.

Koch and Samuels<sup>8</sup> report the loss of about 1/5 to 1/6 of vitamin B in the evaporation process. Milk, because of its constant consumption, is a good source of vitamin B. However it is advisable that other foods such as cereals be given to supplement the amount of this vitamin.

Cow's milk contains only a small and variable amount of vitamin C. This is destroyed by the heat of pasteurization, boiling or sterilization. Therefore additional sources of this vitamin must be supplied in the infant's diet.

Vitamin D content of Wilson's Milk is increased by direct irradiation with ultra-violet rays. Bio-assays are regularly made to insure a uniform potency of 135 U. S. P. units of vitamin D per 16 ounces of evaporated milk. This is the equivalent of 4/10 teaspoon (1.6 grams) minimum standard U. S. P. cod liver oil. This amount of vitamin D will protect the average normal infant from rickets if all the milk used in the formula is irradiated. There are still many phases of rickets which are unsolved problems. The rate of growth of the infant, the race, environment and food assimilation are all factors which should be considered in the question of adequate dosage of vitamin D for the prevention of rickets. Most physicians feel that especially in winter, additional amounts of vitamin D should be given the infant.

Vitamin G (B<sub>2</sub>) is present in as large amounts in Wilson's Evaporated Milk as it is in the original milk.



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## IV. How to Use Wilson's Irradiated Evaporated Milk in the Feeding of Normal Infants

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THE present trend, in pediatrics practice, in infant feeding is to simplify the preparation of the milk formula as much as possible. Wilson's Milk is convenient to use as it requires the minimum of preparation. It may be used in the construction of any milk formula. It is not necessary to boil or strain the milk mixture. No lumps form to clog the nipple.

Complete data concerning the composition of Wilson's Irradiated Milk has been presented so that the physician can construct his own formulas for individual feeding cases.

In the feeding program of any infant a few basic facts should be kept in mind. The formula should vary to meet the needs of the individual infant's digestive capacity and appetite. Food requirements vary with different infants of similar age, size and weight. Marriott suggests that the baby be allowed to be the criterion of its own food requirements. The baby that is quiet, happy, not fretful and sleeps until its regular feeding time is usually a well fed baby. Normal gain in weight, growth and development are the yard sticks to be used in estimating the amounts of food allowed.

### CONSTRUCTION OF FORMULA

The following practical suggestions may be used in constructing Wilson's Milk formulas for average normal infants at various ages.

Normal infants require from 45 to 55 calories per pound of body weight per day.

The minimum amount of Wilson's Milk used in the formula for twenty-four hours is 1 ounce of undiluted milk per pound of body weight.

During the first two months of life the amount of water added to the formula should be approximately double the amount of evaporated milk. The amount of water added is then gradually decreased. Because Wilson's Milk is easily digested it is possible to feed infants concentrated formulas. The average normal infant throughout the remainder of the first year can probably take a formula of evaporated milk diluted with equal parts of water. When concentrated formulas of lesser bulk are used boiled water should be offered to the infant between feedings.

The amount of carbohydrate used in the formula should bear a definite relationship to the amount of milk used. Formulas for the first six months should have approximately one part carbohydrate to six parts of undiluted Wilson's Milk. This proportion may be approximated by adding 1½ ounces of carbohydrate to ½ pint of undiluted evaporated milk or 3 ounces of carbohydrate to 1 pint of undiluted evaporated milk. After cereals are introduced into the infant's diet the carbohydrate should be reduced to 1 ounce per ½ pint of undiluted Wilson's Milk. After the eighth or ninth month the carbohydrate should be still further reduced. At the end of the first year the sugar should be omitted. The carbohydrates used in infant feeding may be milk sugar, cane sugar, corn syrup or any of the maltose-dextrin mixtures.

The volume of each feeding should depend upon the infant's appetite. By using concentrated formulas of Wilson's Milk the volume of each feeding may be reduced and the feeding interval lengthened. Infants fed on these formulas can usually be put on a four-hour feeding schedule.

A formula chart is here submitted as a general guide for the physician.

## FORMULA CHART FOR AVERAGE BABIES AT VARIOUS AGES

Age	Weight	Wilson's Milk	CARBOHYDRATES (choice)				Boiled Water	No. of Feedings Per Day	Each Feeding	Approximate Total Calories
			Cane Sugar	Corn Syrup (Karo, etc.)	Milk Sugar	Maltose Dextrin Mixtures				
Months	Pounds	Fluid Ounces	Level Table-spoons	Level Table-spoons	Level Table-spoons	Level Table-spoons	Ounces	Ounces		
¼	7	4-5	2	2	3	3-4	10-12	6	2½-3	315
½	7	6-7	2	2	3	3-4	11-12	6	3-3+	380
1	8½	8-9	3	3	4	4-5	15-16	6	4-4+	525
2	11	9-10	3	3	4	5-6	12-14	5	4½-5	565
3	12½	11-12	3½	3½	5	6-7	15-16	5	5-5½	650
4	14	12-13	4	4	5-6	7-8	18	5	6-6½	755
5	15	12-13	4	4	5-6	7-8	21	5	7-7+	755
6	16	13-14	4	4	5-6	6-7	22	5	7-7½	800
7	17	14-15	3	3	4	4-5	22	5	7-7½	780
8	18	14-15	2	2	3½	3-4	20	5	7	740
10	20	16	½	½	1	1	16	4	8	740
12	21	16	0	0	0	0	16	4	8	690

Wilson's Irradiated Evaporated Milk — 43 calories per fluid ounce.

### TABLE OF EQUIVALENTS

One ounce Cane Sugar (granulated) . . . 2 level tablespoons . . . 120 calories  
 One ounce Corn Syrup (Karo, etc.) . . . 2 level tablespoons . . . 120 calories  
 One ounce Lactose (milk sugar) . . . . . 3 level tablespoons . . . 120 calories  
 One ounce Maltose-dextrin mixtures . . . 4 level tablespoons . . . 120 calories

### PREPARATION OF FORMULA

Wilson's Irradiated Evaporated Milk formulas are easy to prepare if the following directions are used. The total day's feeding is prepared at one time. The carbohydrate is measured and dissolved in the required amount of boiled water which has been cooled. Wilson's Milk is measured, stirred into the sugar solution and the

mixture then poured into nursing bottles which have been boiled. No further sterilization is necessary. The formula is kept in a cool place.

### ACID MILK FORMULAS

Several years ago Marriott popularized the use of whole lactic acid evaporated milk formulas in infant feeding. Many physicians now prefer acid milk to plain milk mixtures. In recent medical literature there have been several reports questioning the necessity for its use in routine feeding. It is still generally conceded that this type of formula is particularly advantageous in difficult feeding cases, such as presented by premature, marasmic and under-nourished infants. Wilson's Irradiated Evaporated Milk is well adapted to the preparation of acid milk formulas. Due to its previous sterilization and homogenization a very fine flocculent curd is formed when the acid is added.

Lactic acid is used most frequently in the preparation of acid milk mixtures but other acids may be substituted. The amounts used of the various acids are as follows:

*Lactic Acid:* For each fluid ounce of Wilson's Milk in the formula use 6 drops of U. S. P. lactic acid.

*Lemon Juice:* Use 1 teaspoon of strained juice to 2½ ounces of Wilson's Milk.

A practical method in preparing acid milk mixtures with Wilson's Milk is to mix the acid, sugar and water together. While stirring constantly add this solution to the irradiated milk, never vice-versa.

Marriott has recommended a formula commonly used for preparing acid milk mixtures. For the first six months of life the following proportions may be used.

Karo Corn Syrup . . . . . 2½ ounces (5 tablespoons)  
 Lactic Acid (U. S. P.) . . . 1 teaspoon  
 Water to make up to . . . 1 pint



When this acid-sugar solution is mixed with an equal volume of Wilson's Milk the product is equivalent to whole lactic acid evaporated milk with approximately 7½% carbohydrate added. From the sixth to the ninth month the carbohydrate should be reduced to 2 ounces (4 tablespoons) to 1 pint of water. After the ninth month only 1 ounce of sugar should be used to 1 pint of water. At the end of the first year of life both the sugar and acid may be omitted.

#### ADDITIONS TO THE DIET

During the first year of life all babies require supplements to their milk formulas.

Additional amounts of vitamin C should be supplied at an early age. The most convenient natural sources of this vitamin are orange juice and tomato juice. Tomato juice contains almost as much vitamin C as orange juice and may be substituted for orange juice.

Egg yolk may be added to the diet at about the sixth month. A small portion of the yolk of a raw egg may be stirred into the formula when it is prepared. This amount is gradually increased until the infant receives a whole yolk.

Sometime between the third and sixth months cereals are introduced into the infant's diet. The food value of the cereal may be increased by replacing ¼ to ½ of the water used in its preparation with Wilson's Irradiated Evaporated Milk.

About the middle of the first year well cooked vegetables should be given to the infant. Spinach, carrots, peas, beets, green beans or tomatoes are the vegetables preferred. They may be served puréed or in the form of soup made with Wilson's Milk.

By the end of the first year the baby's diet may include scraped beef patties, beef broth, liver patties, cooked fruits, gelatine, custards and other light desserts prepared with milk.

#### THE USE OF WILSON'S MILK FOR OLDER CHILDREN

Even as the baby grows older the mother may continue the use of Irradiated Milk in the child's diet. Wilson's Irradiated Evaporated Milk, reconstructed to whole milk by an equal addition of water, makes a product rich in nutritive value and vitamin D. As the child grows older it should be allowed the continued advantages of this milk.

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### V. The Use of Wilson's Irradiated Evaporated Milk in Difficult Feeding Cases

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**E**XTENSIVE RESEARCH has been carried on, in the last few years, to determine the usefulness of evaporated milk in various types of abnormal and difficult feeding cases. Clinical experiments on this subject are constantly being done in hospitals, clinics and private practice. The reports on these studies have all been favorable to the use of this type of milk. Some of the conditions in which studies are being made are prematurity, anaphylaxis, pylorospasm, infant diarrheas, malnutrition and marasmus.

The treatment of these conditions does not limit itself entirely to feeding. Wilson's Irradiated Evaporated Milk is offered to the physician for the formula, to be used along with other necessary therapeutic measures.

In all of these cases the ability of the infant to digest and assimilate food is impaired. Is it not logical, therefore, that a milk,

which, due to processing, is more easily digested and free from harmful bacteria, would be an ideal food for such infants?

### PREMATURES

The chief difficulty encountered in the feeding of prematures is to supply them with additional calories, protein and vitamins above their basic nutritional requirements. These babies require more food in proportion to their weight than does the full term infant. The whole formula must be in easily digested, concentrated form in order to comply with the infant's limited digestive capacity.

Breast milk is the best milk for the feeding of prematures. When the infant is deprived of this, evaporated milk has been found to be an excellent substitute. Occasionally breast milk seems inadequate for the premature's needs. It may then be fortified with a formula made up in the proportion of one part of Wilson's Milk to three parts of breast milk.

Poole and Cooley<sup>9</sup>, in Detroit, have used evaporated milk in the feeding of large groups of prematures. They report favorable results.

Smyth and Hurwitz, after working for seven years on the problem of using both plain and acidified evaporated milk mixtures in infant feeding, reached this conclusion:

"Premature and congenitally debilitated infants are particularly benefited by a buffered lactic acid evaporated milk formula."<sup>10</sup>

### ALLERGIC INFANTS

Hypersensitivity to milk is frequently observed in infants. Certain sensitive individuals cannot take raw or pasteurized milk without ill effects, but can generally tolerate milk modified by heat. Ratner and Gruehl undertook experiments to determine the antigenic changes in milk resulting from heat. They report that the loss of antigenic properties of heated milk is presumably due to coagula-

tion of the whey proteins. There seems to be no antigenic changes as a result of drying, acidification or pasteurization of milk. Their report is concluded with this statement:

"In view of our experimental and clinical observations, it appears that evaporated milk is the modification of greatest value for the person who is sensitive to milk."<sup>11</sup>

Occasionally allergic infants cannot tolerate any form of cow's milk. In these cases the physician must resort to proprietary foods not containing cow's milk.

### PYLOROSPASM

Wilson's Irradiated Evaporated Milk is particularly adapted to the feeding requirements of the infant with pylorospasm. The concentrated nutritive value, enhanced with vitamin D, and the low curd tension of this milk solves some of the difficulties in these feeding cases. It is possible to use a small volume at a feeding and a long feeding interval. When necessary, Wilson's Milk can be mixed with cereal and given as a thick cereal feeding.

### DIARRHEA

During the fifth annual meeting of the American Academy of Pediatrics, in New York, Doctor Wilburt Davison<sup>12</sup> was chairman of a round table discussion on bacillary dysentery. He outlined the latest therapeutic procedures for this disease and advocated the use of lactic acid evaporated milk formulas to be used in the feeding of infants with this condition.

Poole and Cooley<sup>13</sup> have made observations on a series of 48 infants suffering from infectious diarrheas. They conclude that evaporated milk formulas can be readily adjusted in percentage, acidity and consistency to meet the special requirements of these patients.



Wilson's Irradiated Evaporated Milk is sterile. There is no danger of introducing through the milk additional diarrhoea-producing bacteria.

### MALNUTRITION AND MARASMUS

The problem of feeding infants suffering from malnutrition, marasmus and athrepsia is to supply an easily digested, high caloric type of formula. These infants are underweight. Their digestive capacities are limited, especially for fats and sugars. They must be given high caloric, small volume formulas with a proper balance of the food elements. Lactic acid evaporated milk formulas have proven to be very useful in these cases. These formulas can be easily adjusted to meet the particular tolerance of each case.

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### CONCLUSION

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The preparation of Wilson's Irradiated Evaporated Milk, its physical and chemical composition have been presented for your information. The advantages have been emphasized for the use of this milk in the feeding of normal and abnormal infants whenever a bottle formula is to be used. Extensive research, both laboratory and clinical, has been and is being carried on to scientifically prove the merits of this product. The ultimate proof of its excellent quality can be found in its wide use by physicians in the variety of feeding problems encountered daily in private practice.

Wilson's Irradiated Evaporated Milk is offered to you for your trial and approval.

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13. Poole, Marsh W., and Cooley, Thomas B. Infantile Diarrhea. Am. J. Dis. Child. 43: 1101-1117, 1932.

WISCONSIN ALUMNI RESEARCH FOUNDATION



# VITAMIN "D"

## AND THE TEETH

CONCISE ABSTRACTS  
FROM DENTAL LITERATURE

STEENBOCK IRRADIATION PROCESS



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WISCONSIN ALUMNI RESEARCH FOUNDATION  
MADISON, WISCONSIN

## **Index to Dental Abstracts**

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The following abstracts from scientific publications are by recognized authorities and provide information in concise form on the relation of Vitamin D to the teeth.

These abstracts have been classified and indexed for easy reference as follows:

<b>Vitamin D Is a Primary Factor in Tooth Building, Nourishment, and Protection . . . . .</b>	<b>Pages 4-6</b>
<b>Scarcity of Vitamin D in Foods . . . . .</b>	<b>Pages 7 and 8</b>
<b>Inadequacy of Solar Ultra-violet . . . . .</b>	<b>Pages 9 and 10</b>
<b>Importance of Vitamin D in Forming Teeth . . . . .</b>	<b>Page 12</b>
<b>Vitamin D and Prevention of Caries . . . . .</b>	<b>Pages 13-14-19-20</b>
<b>Irradiated and Metabolized Vitamin D Milks . . . . .</b>	<b>Page 15</b>
<b>Irradiated Evaporated Milk . . . . .</b>	<b>Page 16</b>
<b>Viosterol and Other Vitamin D Medicinals . . . . .</b>	<b>Page 17</b>
<b>Vitamin D Enriched Foods . . . . .</b>	<b>Page 18</b>
<b>Benefits of Vitamin D During Prenatal and Nursing Periods . . . . .</b>	<b>Pages 21-22</b>
<b>Vitamin D and Rickets . . . . .</b>	<b>Pages 23-26</b>
<b>Relation of Rickets to Dental Caries . . . . .</b>	<b>Pages 27-28</b>
<b>Vitamin D Requirements of Adults . . . . .</b>	<b>Page 29</b>
<b>Toxicity Latitude of Vitamin D . . . . .</b>	<b>Page 30</b>

**WISCONSIN ALUMNI RESEARCH FOUNDATION**  
Madison, Wisconsin

Administrators of the Steenbock Process  
for enriching certain foods and pharmaceutical products with Vitamin D through irradiation with ultra-violet light.

(U. S. Patent No. 1680818)

## ***Vitamin D is a Primary Factor in Tooth Building, Nourishment, and Protection***

**I**T IS now recognized that there are at least 37 different elements necessary for normal nutrition, namely, 18 amino acids, one fatty acid (linolenic acid), glucose, 11 minerals and 6 vitamins. While a lack of any of these substances will interfere with the health of the animal as a whole, the close relationship between certain of these elements and definite pathologic conditions is well recognized; for instance, the relation of iodine to the production of goiter, of vitamin C to scurvy, of vitamin D to rickets, and iron and copper to anemia. It is not unreasonable, therefore, to consider that a limited number of these elements may be intimately connected with the normal nutrition of the tooth, and conversely, that a lack of these elements may result in the development of certain diseased conditions, including caries.

As the tooth is composed to a large extent of calcium and phosphorus, and as it has been established that vitamin D is essential for the optimal utilization of these elements by the body, our attention was directed particularly to these three elements.

**Agnew, Agnew, and Tisdall:** "The Production and Prevention of Dental Caries", *Jour. of Pediatrics*, 2, 2, 190, Feb. 1933.

**T**HE recent work of Boyd, Drain and Stearns, in which they found a definite correlation between the degree of retention of calcium and phosphorus, and the freedom of teeth from decay, would indicate that adequate supplies of calcium, phosphorus and vitamin D are important factors in the formation and maintenance of normal teeth as well as bones. Tooth decay has been markedly reduced by dietary means. Melanby, Boyd and Drain, Price, Bunting, McBeath, Brodsky, Howe, Jones, Hawkins, Hanke, and others have reduced tooth

decay by diets which contain large amounts of milk, meat, eggs, vegetables and fruit, and in many instances, vitamin D. The foregoing articles of food are all rich sources of calcium and phosphorus. It would be reasonable to conclude, therefore, that although there are probably other factors involved, adequate supplies of calcium, phosphorus and vitamin D are important factors in the formation and maintenance of normal teeth.

**Anderson, Williams, Halderson, Summerfeldt, and Agnew:** "The Influence of Vitamin D in the Prevention of Dental Caries", *Jour. of Amer. Dental Assn.*, 21, 1349-1366, 1934.

**A**LTHOUGH it is recognized that milk and other protective foods are conducive to freedom from dental decay, the precise elements in these foods that bring about these favorable results have not yet been determined. From the scientific evidence at hand, it is apparent that certain vitamins, particularly vitamins C and D, and the minerals calcium and phosphorus are the salient factors.

**Tobey, James A., M. S., Dr. P. H.:** "Vitamin D Milk and the Teeth", *Dental Survey*, March 1934.

**I**T IS now well understood that dentist and physician alike must resort to reenforcement of diet, and, at the present time, calcium phosphate with vitamin D seems to be the most desirable agent. Such reenforcement is not necessary if the patient's diet contains vitamin D, with the necessary mineral content. Because American diets are so inadequate in these requirements, diets of patients who come to the dentist for treatment of their teeth will have to be corrected or reenforced.

**Gardner, Boyd S., D. D. S., Rochester, Minn.:** "The Dentist in Group Medicine", *Jour. of A. D. A.*, 21, 75-83, Jan. 1934.



**W**ITHOUT satisfactory prenatal nutrition the teeth of the child will be faulty.

**McCollum, E. V., and Simmonds, Nina:** "Newer Knowledge of Nutrition", 4th Edition, p. 272, 1929.

**I**N ADDITION to its proved great value in the treatment of rickets and allied disorders, there are many indications of its value in other disorders. In the management of pregnancy, in lactation, in the correction of dental caries, for promoting sound dentition and good bone formation in early years, and as a special source of energy in many disorders of nutrition, irradiated milk has proved its value. In some of these conditions there is a defect in the nutrition of calcium and phosphorus, which is corrected by the use of milk.

**Fenton, James:** "Maternity and Infant Welfare Service in England and Wales", Amer. Jour. of Publ. Health, 21, 12, Dec. 1931.

**T**HE importance of vitamin D has been the subject of considerable recent study. This vitamin controls, probably absolutely, the calcification of bones and teeth. In other words, it is necessary for sound bone and tooth formation in the young body as it develops. . . .

**McCollum, E. V.:** "Safeguarding the Growing Child". No. 5.

. . . there is a close relation between deficiency of vitamin D in the diet and the structure of the teeth. The work of Mrs. Mellanby on pulps has demonstrated clearly that diets of a character which tend to produce rickets tend also to interfere with the proper calcification and enamelling of the teeth.

**McCollum, E. V., Ph. D., Sc. D.,** Abstract from "Relationship Between Diet and Dental Caries", Journal of Dental Research. Reprinted from Dental Survey, p. 41, April 1933.

## Scarcity of Vitamin D in Foods

**I**T IS not generally recognized that a good ordinary diet, containing adequate amounts of milk, meat, eggs, vegetables and fruit, is still deficient in one of the essential food elements, namely, vitamin D. This vitamin is not present in perceptible amounts in fruits and vegetables. The only ordinary foods that contain it are egg yolks, and, to a very slight extent, summer milk and summer butter. It requires approximately 5 egg yolks to furnish the vitamin D equivalent of one teaspoonful of cod liver oil. The amount of vitamin D in summer milk and summer butter is comparatively small; and the fact that infants during the winter months can develop severe rickets while receiving one quart of milk daily indicates that this vitamin is absent, or at least present only in negligible quantities, in winter milk. . . .

**Anderson, Williams, Halderson, Summerfeldt, and Agnew:** "The Influence of Vitamin D in the Prevention of Dental Caries". Jour. of Amer. Dental Assn. 21, 1349-1366, 1934.

**B**UTTER and egg yolk are the only common foods which have been shown to contain the antirachitic principle (vitamin D) in appreciable amounts.

**McCollum and Simmonds:** Food, Nutrition and Health, p. 22.

**V**ITAMIN D is thus much the most limited in distribution of all the known vitamins; cod liver oil, other fish oils, egg yolk and butterfat to a slight extent, being practically the only naturally occurring sources so far discovered. It is plain that many children must grow up and many men and women live from day to day with very little vitamin D in their food.

**Blunt and Cowan:** "Ultra-violet Light and Vitamin D in Nutrition". University of Chicago Press, p. 122.



**T**HE antirachitic factor is characterized by its limited distribution in food. . . . The only source, in addition to cod liver oil, in which it has been found unequivocally and in amount which gives it importance as a food, is the yolk of egg.

Hess: Rickets, Osteomalacia and Tetany, p. 121.

**T**ODAY the scientific world knows of six vitamins, each of which has a distinct benefit in the diet. These vitamins are identified as A, B, C, D, E, and G. Vitamin D is the most recently discovered vitamin and also the first of the entire series to reveal its chemical nature. Unlike the other vitamins, very little of it is found in foods.

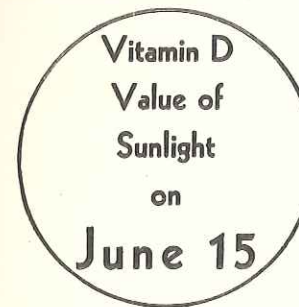
McCollum, E. V., Ph. D., Sc. D., School of Hygiene and Public Health, Johns Hopkins University: "Discovery of Vitamins Outgrowth of Long Research, Not 'Just a Fad'".

**I**N GENERAL there is a marked tendency for the diet of the average American of today to have too little calcium, too much phosphorus in proportion to the calcium, too little vitamin A, too little vitamin D, and in some cases too little of vitamins C and G. . . .

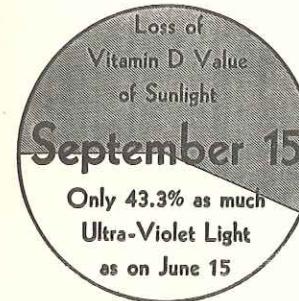
It is also essential to keep in mind a third principle of importance in nutrition—that of obtaining daily a sufficient amount of vitamin D. Innumerable biologic tests have proved the importance of this vitamin for sound bone and tooth formation.

McCollum, E. V., Ph. D., Sc. D.: "Building Resistance and Prolonging Life". No. 3.

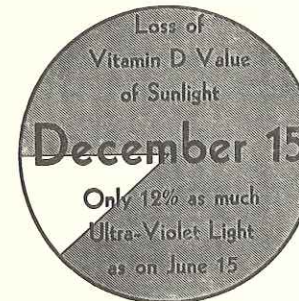
## Sunlight is Not a Dependable Nor Uniform Source of Vitamin D



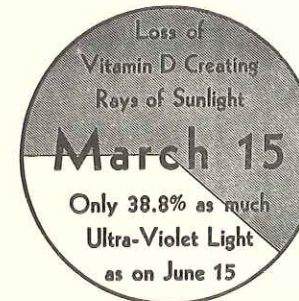
● **SUMMER . . .** Sun's ultra-violet light creates bone and tooth nourishing Vitamin D if the body is exposed to pure sunlight. No Vitamin D formed on cloudy or rainy days, when indoors, in shade, nor when air is smoky. Irradiated Vitamin D products supply constant amounts of Vitamin D the year 'round.



● **AUTUMN . . .** Sun's Vitamin D creating rays are less than half as strong as on June 15. Days are shorter. Children are indoors more—at home and at school. Less Vitamin D formed by sunlight; therefore, greater need for Irradiated Vitamin D Products.




● **WINTER . . . . .** Greatest need for Irradiated Vitamin D Products. Sunlight is less than  $\frac{1}{8}$  as effective as on June 15. Shortest days of the year. Cold weather keeps family indoors. Very little Vitamin D formed in the body. Irradiated Vitamin D Products supply abundant Vitamin D regularly.



● **SPRING . . . . .** Sun's ultra-violet rays still weak—only about  $\frac{3}{8}$  as strong as on June 15. Cool, cloudy, unpleasant weather interferes with outdoor recreation. Children indoors in school or at home. Irradiated Products are a pleasant and **DEPENDABLE** source of Vitamin D.

Illustrations Based on Laurens—"Physiological Effects of Radiant Energy", p. 44. Data applies specifically to Baltimore, Md., generally to other cities.





THE  
BENEFITS  
OF  
IRRADIATED  
VITAMIN D  
MILK

WISCONSIN ALUMNI RESEARCH FOUNDATION



The claims for Irradiated Vitamin D Milk, contained in this booklet, have been accepted by the American Medical Association, Committee on Foods . . . The process of direct irradiation of milk by ultra-violet light is controlled by the Wisconsin Alumni Research Foundation, under the Steenbock patent (U. S. Patent No. 1680818).

## WHAT IS RICKETS?

Why doesn't every child grow up with strong, straight legs, well-formed head and a well developed chest?

Why do so many boys and girls have unsound, uneven teeth which often cause a life-long handicap that endangers their success and happiness in life?

These handicaps are very often the results of rickets or bone disease caused by a shortage of lime, phosphorus and Vitamin D in the diet. Rickets is a very common disease. Over 50% of American babies in some large cities suffer from rickets in some degree. In very severe cases this disease causes bow legs, knock knees, deformed chest and pelvis (lower part of the abdomen where babies are carried during pregnancy), bulging forehead, and weak, crooked teeth.

Many other babies barely escape rickets, their supply of Vitamin D and minerals (lime and phosphorus) being reduced to the danger point.



WISCONSIN ALUMNI RESEARCH FOUNDATION  
MADISON, WISCONSIN

THE Wisconsin Alumni Research Foundation is a corporation, not organized for profit, formed to develop patentable ideas discovered at the University of Wisconsin.



Dr. Harry Steenbock of the University patented the process of employing ultra-violet rays to incorporate Vitamin D in foods and medicinal products. He assigned his patents to the Foundation, which controls the irradiation process through strict license agreements with commercial organizations in order that the process may always be used to advance the best interests of humanity.

The Foundation will gladly supply any desired information to the general public, the medical and dental professions, public health officials, school executives, social workers, milk dealers and others.

## Why Does Rickets Attack So Many Babies?

Babies should receive protection against rickets from the *ultra-violet* rays of the sun. These rays acting on the *unclothed* portions of the body increase the Vitamin D in the system.

But due to the dust, smoke, and moisture in the air not enough of these protective sun rays reach the infant—clothed or unclothed. That is why not enough Vitamin D is formed in our bodies—why it must be included in food.

Ordinary foods contain very little or no Vitamin D. Only egg yolk, which babies cannot be given early enough, has a fair supply. Therefore, unless enough Vitamin D is supplied through Irradiated Vitamin D Milk, the basic food for babies, or by other means, many infants and growing children will always suffer from rickets.

Too often the danger of rickets is not discovered until after damage has been done—until after the child has developed bowed legs, knock knees, a poorly shaped head or irregular teeth, for instance. But babies who get Irradiated Vitamin D Milk regularly (20 to 24 ounces daily) are *automatically* protected against these dangers.



The late Dr. Alfred Hess, world renowned medical scientist and clinician said:

"Irradiated Milk seems to be the most desirable way of preventing rickets on a community scale. Only 20 to 24 ounces (2½ to 3 glasses) daily is needed to assure protection. This therapeutic agent (Irradiated Milk), has the advantage of being automatic and inexpensive and of providing calcium and phosphorus as well as the anti-rachitic (rickets-preventing) factor."

*Journal of the American Medical Association, Vol. 101, No. 3, Page 184, July 15, 1933.*



### **Is There a Vitamin F?**

No. This vitamin was re-identified and is now grouped with Vitamin G, which prevents pellagra.

### **People Used to Get Along Without Irradiated Milk.**

Yes, people didn't have Irradiated Vitamin D Milk until a few years ago. People have lived without it, but they will get along better with it. Every mother wants to protect her teeth during prenatal and nursing periods, and wants her children to be safeguarded against rickets. Irradiated Vitamin D milk helps to accomplish this.



THE STORY OF  
IRRADIATED VITAMIN 'D' MILK



## **We again KEEP OUR PLEDGE**

By the very nature of our function as your milk dealer we are the keeper of a sacred trust.

Because milk is the very foundation of the diet, we realize that ours is the responsibility of safeguarding and nourishing every member of your family by furnishing products of utmost purity, wholesomeness and nutritive value.

We have pledged ourselves constantly to improve the beneficial qualities of our milk—not merely by exercising more rigid control and selection of farm sources, but by applying new plant methods for safeguarding the purity and wholesomeness of milk.

In adopting direct irradiation of milk for Vitamin D enrichment, we have again kept this pledge by making available to you the most important nutritional discovery in the dairy field since the introduction of pasteurization.

The Irradiation process is controlled by the Wisconsin Alumni Research Foundation, a scientific organization through which Dr. Steenbock, the discoverer, has chosen to give his findings to the world. All milk dealers using the Steenbock process must first be licensed by the Foundation, and the product of all licensed dealers is continually subjected to frequent laboratory tests to check the uniformity and potency of the Vitamin D content.

The Foundation will be glad to supply any desired information to members of the medical and dental professions, public health officials, school executives, social workers, milk dealers and others identified with the dairy industry, as well as to people interested in this milk for themselves and their families. The Foundation further suggests that you consult your physician regarding the benefits which Irradiated Vitamin D Milk can provide to yourself and your family.



The process of direct irradiation of milk by ultraviolet light is controlled by the Wisconsin Alumni Research Foundation, under the Steenbock patent (U. S. Patent No. 1680818).

Copyrighted, 1933, by Wisconsin Alumni Research Foundation





FEEDING YOUR

*Baby*



AND OLDER CHILDREN



# WHY WILSON'S MILK IS AN EXCELLENT FOOD FOR YOUR BABY

## A BUILDER OF STRONG BONES AND STURDY BODIES

PHYSICIANS have always maintained that whenever possible a mother should nurse her baby until nature decrees that weaning time has arrived. However, in many cases supplementary feeding is necessary for babies who are not receiving mother's milk of sufficient quantity or quality. Experience has proven that Wilson's Milk supplies the necessary addition to the diet, with excellent results. And in such cases, weaning becomes in effect a much more gradual and simple process.

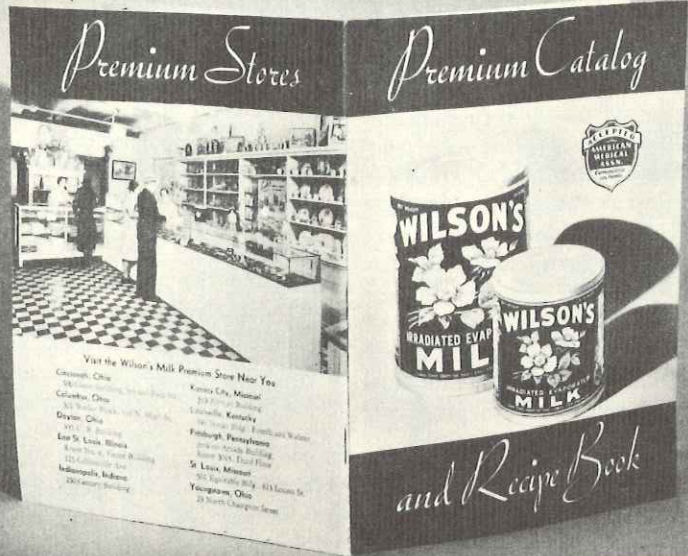
In any event, it is very important that you choose the best food

for baby at weaning time. The food selected must supply certain nourishing elements, must be readily digestible, and must be safe and pure. Wilson's *Irradiated Unsweetened Evaporated Milk* fulfills each of these requirements, and even more:

## FOOD AND VITAMIN CONTENT

1. Wilson's *Irradiated Unsweetened Evaporated Milk* supplies all the important food values of whole cow's milk, including those vitamins which milk can be depended upon to furnish.
2. Wilson's Milk supplies an extra amount of Vitamin D, created by





## FREE! WILSON'S PREMIUM CATALOG AND RECIPE BOOK

● You are entitled to many valuable and useful premiums in return for labels from the cans of Wilson's Milk you buy. Call at any of the Premium Stores listed below, or write direct for your free copy of the Premium Catalog—combined with a book of recipes for many delicious foods made with Wilson's Milk.

**WILSON MILK COMPANY, Inc.**  
 Box 895, c/o Premium Dept.  
 INDIANAPOLIS, INDIANA

- Cincinnati, Ohio**  
500 Glenn Building, 5th and Race Sts.
- Columbus, Ohio**  
301 Wesley Block, 101 N. High St.
- Dayton, Ohio**—935 U. B. Building
- East St. Louis, Illinois**  
Room No. 9, Victor Building
- Indianapolis, Indiana**  
250 Century Building
- Kansas City, Missouri**  
319 Altman Building
- Louisville, Kentucky**  
346 Starks Bldg., Fourth & Walnut
- Pittsburgh, Pennsylvania**  
Jenkins Arcade Building  
Room 3013, Third Floor
- St. Louis, Missouri**  
501 Equitable Bldg., 613 Locust St.
- Youngstown, Ohio**  
29 North Champion Street

# BABY'S WEIGHT RECORD

AT BIRTH \_\_\_\_\_

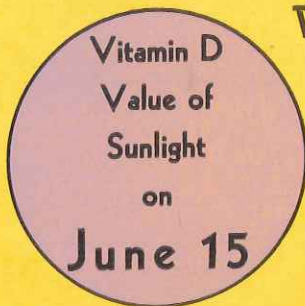
AGE	WEIGHT
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2 MONTHS	.....
3 MONTHS	.....
4 MONTHS	.....
5 MONTHS	.....
6 MONTHS	.....
7 MONTHS	.....
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10 MONTHS	.....
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AGE	WEIGHT
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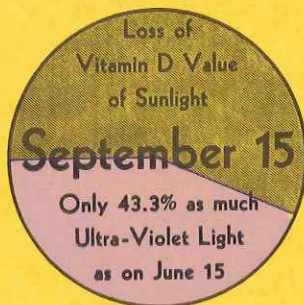




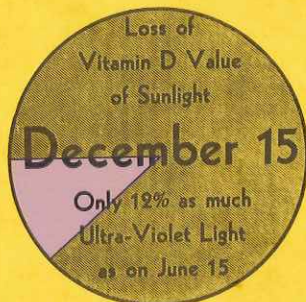
## Why Irradiated Vitamin D Milk Is Needed Most During Fall, Winter and Spring



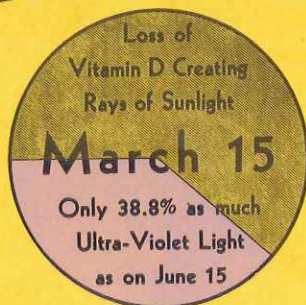
● **SUMMER** . . . . . Sun's ultra-violet light creates bone and tooth nourishing Vitamin D if the body is exposed to pure sunlight. No Vitamin D formed on cloudy or rainy days, when indoors, in shade, nor when air is smoky. Continue using Irradiated Vitamin D Milk.



● **AUTUMN** . . . . . Sun's Vitamin D creating rays are less than half as strong as on June 15. Days are shorter. Children are indoors more — at home and at school. Less Vitamin D formed by sunlight; therefore, greater need for Irradiated Vitamin D Milk.



● **WINTER** . . . . . Greatest need for Irradiated Vitamin D Milk. Sunlight is less than  $\frac{1}{8}$  as effective as on June 15. Shortest days of the year. Cold weather keeps family indoors. Very little Vitamin D formed in the body. Serve Irradiated Vitamin D Milk with every meal.



● **SPRING** . . . . . Sun's ultra-violet rays still weak — only about  $\frac{3}{8}$  as strong as on June 15. Cool, cloudy, unpleasant weather interferes with outdoor recreation. Children indoors in school or at home. For a pleasant and **DEPENDABLE** source of Vitamin D serve Irradiated Milk every day.

Based on Laurens — "Physiological Effects of Radiant Energy", p. 44. Data applies specifically to Baltimore, Md., generally to other cities.